



UNITED STATES AIR FORCE RESEARCH LABORATORY

Summary of Marine Mammal Occurrence and Population Estimates in U.S. Coastal Waters Subject to Military Aircraft Overflights

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This technical report has been reviewed and is approved for publication.

FOR THE COMMANDER



MARIS M. VIKMANIS
Chief, Crew System Interface Division
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PREFACE

The work reported herein was conducted by Science Applications International Corp. (SAIC), 3990 Old Town Avenue, #105A, San Diego CA 92110 from December 1995 to October 1998 under Air Force contract number F41624-96-C-0005. The work unit number is 30370509. The contract was monitored by Robert A. Lee, Aural Displays and Bioacoustics Branch, Crew System Interface Division, Human Effectiveness Directorate, Air Force Research Laboratory.

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CONTENTS

	Page No.
List of Acronyms and Abbreviations	iii
OVERVIEW	1
Regional Maps.....	1
Species Summary Tables.....	1
Qualifiers	2
REGIONAL MAPS AND SPECIES SUMMARY TABLES	3
Northeast Pacific: Oregon/Washington	4
Southeast Pacific: California.....	6
Gulf of Mexico (GOM).....	9
Southwest Atlantic: South Carolina to Florida	11
Northwest Atlantic: South Carolina to Maine	13
REFERENCES	15
APPENDIX: SANCTUARIES AND RESERVES SUMMARY TABLES	
Contents	17

List of Acronyms and Abbreviations

Marine Mammal Stock Identifiers

CA	California Stock
Can-EC	Canadian East Coast Stock
E. FL	Eastern Florida Stock
East N. Pacific	Eastern North Pacific Stock
East. Trop. Pacific	Eastern Tropical Pacific Stock
GM/BF	Gulf of Maine/Bay of Fundy Stock
OR/WA	Oregon/Washington Stock
WN ATL	Western North Atlantic Stock

General

AFB	Air Force Base
Aut-Wtr	Autumn-Winter
CV	Coefficient of Variation
EIS	Environmental Impact Statement
GOM	Gulf of Mexico
NE	Northeast
NW	Northwest
NMFS	National Marine Fisheries Service
OCS	Outer Continental Shelf
SE	Southeast
SEFSC	Southeast Fisheries Science Center
Spr-Sum	Spring-Summer
Sum-Aut	Summer-Autumn
SW	Southwest
SWFSC	Southwest Fisheries Science Center
Wtr-Spr	Winter-Spring
WPAFB	Wright Patterson Air Force Base

OVERVIEW

This technical report summarizes marine mammal occurrence data for Wright Patterson Air Force Base (WPAFB), Aircraft Overflight Regions 1-5, as outlined below:

- (1) **NE PACIFIC: OR/WA** - the area from 42°N-50°N (i.e., Oregon/Washington coast), offshore to ~200 nmi plus a rectangular area measuring ~200 nmi wide by ~600 nmi long extending WNW from Seattle.
- (2) **SE PACIFIC: CA** - the area from ~32°N-40°N (i.e. California coast), offshore to ~200 nmi plus a rectangular area measuring ~200 nmi wide by ~600 nmi long extending SW from Los Angeles.
- (3) **GULF OF MEXICO** - the northern Gulf of Mexico (GOM) from the Florida Keys to the Texas-Mexico border, offshore to ~250 nmi.
- (4) **SW ATLANTIC: FL-SC** - the area from ~33°N-25°N (i.e. roughly from South Carolina to Miami), offshore to ~250 nmi.
- (5) **NW ATLANTIC: NC-ME** - the area from ~33°N-42°N (i.e. roughly from North Carolina to Maine), offshore to ~225 nmi plus a rectangular area measuring ~400 nmi wide by ~600 nmi long extending ENE from Cape Cod.

Regional Maps

Maps for each of the five regions were formatted in ESRI ArcView, such that (if desired) the U.S. Air Force can easily incorporate them into other ecosystem management programs in development (e.g., McGinnis and Pruitt 1997). A map of each region is immediately followed by a marine mammal species summary table. Regions are ordered in a 'counter-clockwise' fashion, starting with the Northeast Pacific Region. Included is an enlarged map of the Southern California Bight, where more detailed information on pinniped occurrence in the Channel Islands is provided. Sanctuaries and reserves are plotted on regional maps as an additional aid for planning appropriate environmental mitigation to overflights. Additional detail on these protected areas is provided in the enclosed Appendix: Sanctuaries and Reserves Summary Tables.

Species Summary Tables

Species summary tables for each region list parameters identified as key to calculations of potential harassment to marine mammals caused by Air Force aircraft overflights. These include: (1) species common to each region, identified by common and scientific names; (2) stock identity and most recent estimate of population size; (3) Wtr-Spr/Sum-Aut seasonal occurrence index; (4) dive profile (i.e., approximate percentage of time at surface); and (5) pertinent comments. Except where noted, stock identity and population estimates can be referenced to the relevant National Marine Fisheries Service (NMFS) Administrative and Stock Assessment Reports (i.e., Barlow [1997], Barlow et al. [1997] and Hill et al. [1997] for Regions 1-2; Waring et al. [1997] for Regions 3-5). Seasonal occurrence and dive profile data can be referenced to the NMFS reports and various scientific reports.

Qualifiers

The information summarized in the species tables represent 'generalities'; some based on better information than others. For example, population estimates presented in the 'SE Pacific: CA table' are more reliable (i.e., more recent and based upon standardized survey protocol) than those for either the NW or SW Atlantic tables. In addition, seasonal occurrence and dive profile information presented in all tables are 'roundhouse guesses' based upon published information. Specific data on these parameters have been collected for a few marine mammal populations, but the quantity and quality of data varies considerably. In the case of 'dive profile', we purposely estimated the 'high end' of surface time in an effort to best represent the time that an animal might be at or near (i.e., within ~10 m) the surface. Furthermore, it is important to remember that marine mammals are not uniformly distributed in any of these regions at any time. Some species are highly seasonal, and their occurrence in fairly high numbers at a particular place and time can be somewhat predicted (e.g., blue whales off Monterey Bay, CA in summer and autumn; right whales in critical habitat nearshore GA and northern FL in winter; northern elephant seals molting at Channel Island rookeries in spring and summer). However, many species are itinerant travelers whose migratory patterns are not well understood, and for whom reliable information on calving, mating and feeding grounds is not available. Therefore, the seasonal occurrence indices and the dive profiles only provide a crude baseline for predictions of marine mammal occurrence.

REGIONAL MAPS AND SPECIES SUMMARY TABLES

Northeast Pacific

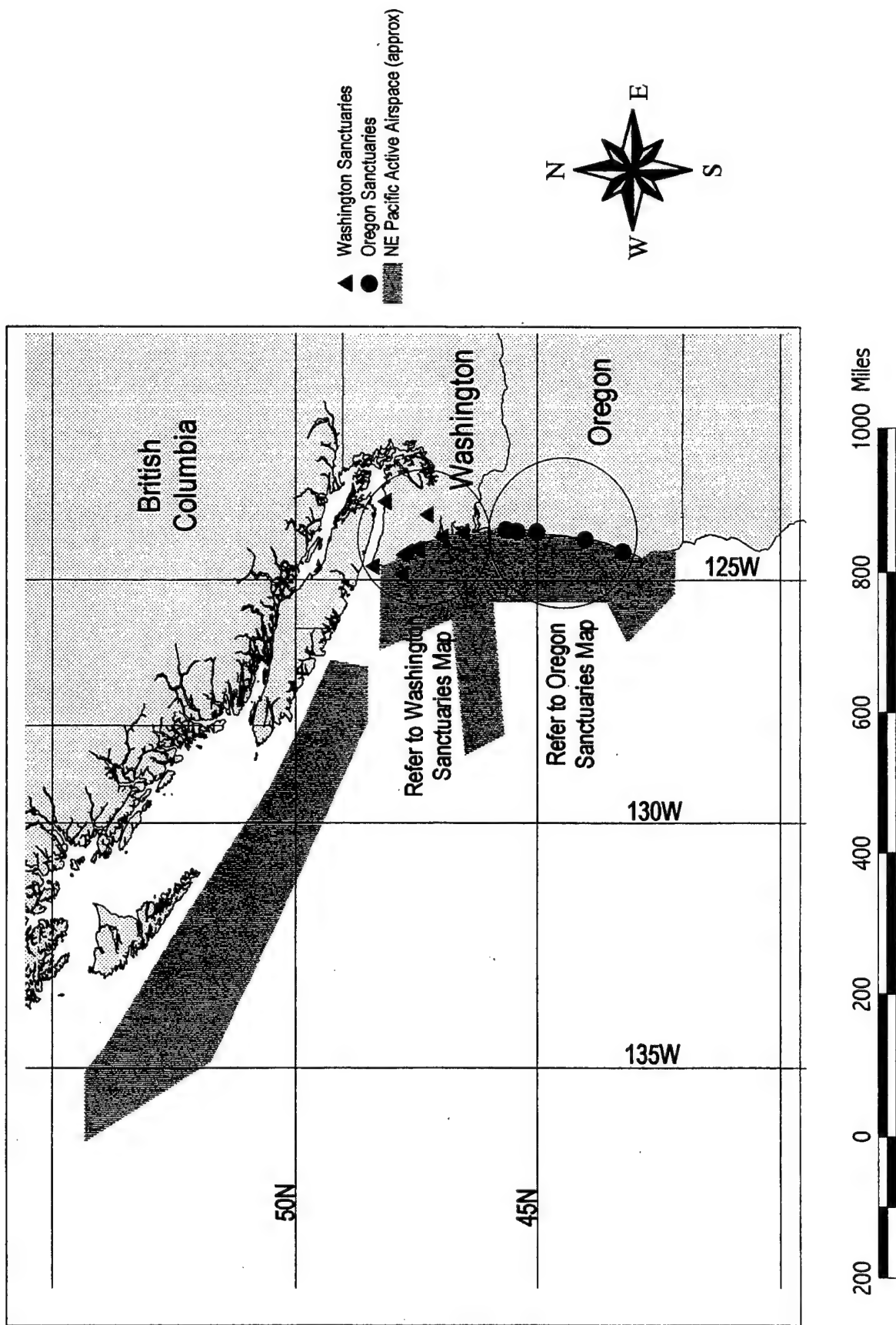


Table 1. Marine mammal population estimates, seasonal occurrences and dive profiles for Northeast Pacific (OR/WA).

Common Name	Scientific Name	Stock	Pop. Est. (CV)	Seasonal	Occurrence	Dive Profile	Comment
				Wtr-Spr	Sum-Aut		
MYSTICETES							
Gray whale	<i>Eschrichtius robustus</i>	East. N. Pacific	22,263 (0.09)*	Common	Common	20% at surface	Recent population estimate; some in area year-round with maximum numbers during migration pulses
Blue whale	<i>Balaenoptera musculus</i>	OR/WA	No estimate	Uncommon	Common	20% at surface	SOSUS detections offshore OR/WA July-January (Stafford 1995; Stafford and Fox 1998)
Fin whale	<i>Balaenoptera physalus</i>	OR/WA	136 (0.41)	Uncommon	Common	20% at surface	Year-round call detections via SOSUS (Stafford, pers. comm.)
Minke whale	<i>Balaenoptera acutorostrata</i>	OR/WA	262 (1.00)	Uncommon	Common	20% at surface	Resident whales nearshore WA (Dorsey et al. 1990)
Humpback whale	<i>Megaptera novaeangliae</i>	OR/WA	39 (0.42)	Uncommon	Common	30% at surface	OR: May-Nov; WA: July-Sep (Brueggeman 1992)
Sei whale	<i>Balaenoptera borealis</i>	East. N. Pacific	No estimate	Uncommon	Uncommon	20% at surface	Pelagic distribution in temperate waters
Northern right whale	<i>Eubalaena glacialis</i>	East. N. Pacific	No Estimate**	Rare	Rare	30% at surface	One seen offshore WA, May 1992 (Carretta et al. 1994)
ODONTOCETES							
Sperm whale	<i>Physeter macrocephalus</i>	OR/WA	303 (0.57)	Common	Common	10% at surface	Offshore OR/WA coast spring & autumn; usually seaward of shelf
Pygmy (or dwarf) sperm whale	<i>Kogia breviceps (or simus)</i>	OR/WA	1,376 (2.0)	Uncommon	Common	20% at surface	Usually seaward of shelf; no separate estimate for <i>K. simus</i>
Killer whale	<i>Orcinus orca</i>	OR/WA	319 (0.80)	Common	Common	30% at surface	Cosmopolitan sp.; resident and transient pods offshore WA/Can. BC
Baird's beaked whale	<i>Berardius bairdii</i>	OR/WA	110 (0.41)	Uncommon	Common	10% at surface	Continental slope and basin habitat
Beaked whales spp.	<i>Mesoplodon spp.</i>	OR/WA	2,438 (0.68)	Unknown	Unknown	10% at surface	spp. = 5 species; continental slope and basin habitat
Risso's dolphin	<i>Grampus griseus</i>	OR/WA	7,065 (0.51)	Uncommon	Common	30% at surface	Continental slope and basin habitat
Northern right whale dolphin	<i>Lissodelphis borealis</i>	OR/WA	4,683 (0.77)	Uncommon	Common	30% at surface	Continental slope and basin habitat
Short-beaked common dolphin	<i>Delphinus delphis</i>	OR/WA	11,194 (1.00)	Uncommon	Common	30% at surface	So. CA = shelf & slope; N. of Pt. Conception = slope and basin
Striped dolphin	<i>Stenella coeruleoalba</i>	OR/WA	113 (2.00)	Uncommon	Common	30% at surface	Offshore waters, usually >100 nm from shore
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	OR/WA	7,180 (1.66)	Uncommon	Common	30% at surface	Continental shelf and slope water
Dall's porpoise	<i>Phocoenoides dalli</i>	OR/WA	63,152 (0.78)	Uncommon	Common	30% at surface	So. CA = shelf & slope; N. of Pt. Conception = slope and basin
Harbor porpoise	<i>Phocoena phocoena</i>	OR/WA Coastal	26,175 (0.21)***	Common	Common	30% at surface	97% in water < 200m deep; no seasonal movements documented
		Inland WA	3,352 (0.27)***	Common	Common	30% at surface	Puget Sound; Juan de Fuca & Georgia straits
PINNIPEDS							
California sea lion	<i>Zalophus c. californianus</i>	U.S.	167,000-188,000 (n/a)***	Uncommon	Common	30% at surface	Breed on Channel Is. May-June; Molt females Aug-Oct, males Nov-Feb
Harbor seal	<i>Phoca vitulina richardsi</i>	OR/WA Coastal	27,131 (0.07)***	Common	Common	30% at surface	Breed So. CA islands & central CA shore March-May; Molt May-August
		Inland WA	16,253 (0.07)***	Common	Common	30% at surface	
Northern elephant seal	<i>Mirounga angustirostris</i>	CA Breeding	84,000 (n/a)***	Uncommon	Common	10% at surface	Breed on Channel Is. Dec-March; Molt females Apr-May, males Jun-Aug
Northern fur seal	<i>Callorhinus ursinus</i>	San Miguel Is.	10,036 (n/a)***	Uncommon	Common	30% at surface	Breed San Miguel Is. June-Aug; Molt undetermined
Steller sea lion	<i>Eumetopias jubatus</i>	E. AK/OR/WA/CA	37,746 (n/a)*	Uncommon	Common	30% at surface	Breed coastal OR June-July; Molt Aug-Sep
MUSTELIDS							
Sea otter	<i>Enhydra lutris lutris</i>	WA	200-300^A	Common	Common	50% at surface	Small breeding colony offshore NE WA coast

NOTES

Population Estimates:

Barlow 1997: Table 5

* Hobbs et al. in press

** Carretta et al. 1994

*** Barlow 1997

^ Hill et al. 1997

^^ Benz 1996

(n/a) = not available

Seasonal Index:

Barlow 1995

Forney et al. 1995

Brueggeman (ed.) 1992

Dive Profile:

Leatherwood et al. 1983

Ridgway and Harrison 1985, 1989

Reeves et al. 1992

note: pinniped dive profile for 'at sea' interval only

Southeast Pacific

- Southern California Sanctuaries
- ▲ Mid-California Sanctuaries
- SE Pacific Active Airspace (approx)

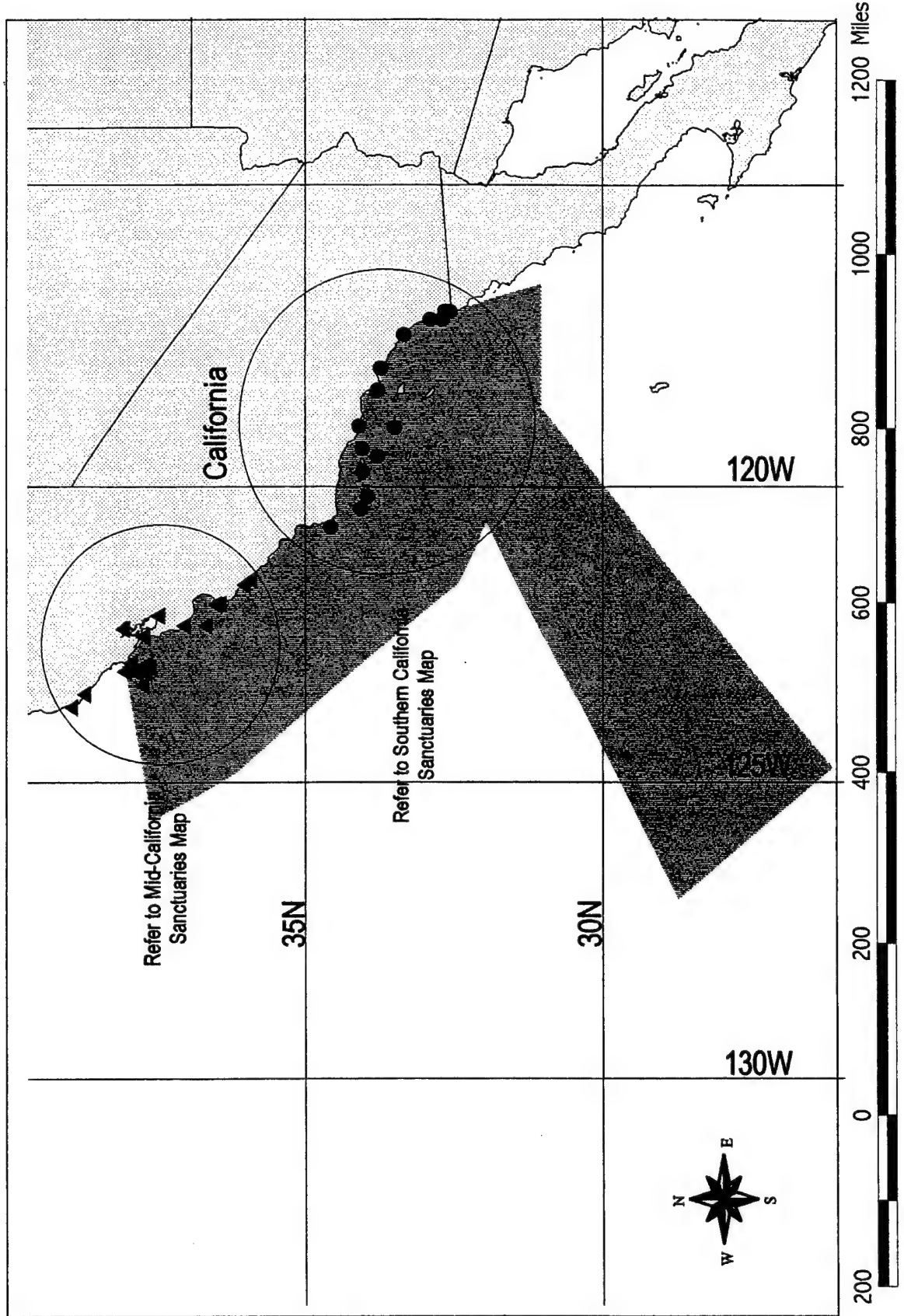


Table 2. Marine mammal population estimates, seasonal occurrences and dive profiles for Southeast Pacific (CA).

Common Name	Scientific Name	Stock	Pop. Est. (CV)	Seasonal	Index	Dive Profile	Comment
				Wtr-Spr	Sum-Aut		
MYSTICETES							
Gray whale	<i>Eschrichtius robustus</i>	East. N. Pacific	22,263 (0.09)*	Common	Uncommon	20% at surface	Good/recent population estimate
Blue whale	<i>Balaenoptera musculus</i>	CA (1996)	2,146 (0.23)	Uncommon	Common	20% at surface	Good/recent population estimate
Fin whale	<i>Balaenoptera physalus</i>	CA (1996)	1,896 (0.59)	Uncommon	Common	20% at surface	Good/recent population estimate
Minke whale	<i>Balaenoptera acutorostrata</i>	CA (1996)	446 (0.44)	Uncommon	Common	20% at surface	Resident whales in shelf waters
Humpback whale	<i>Megaptera novaeangliae</i>	CA (1996)	1,701 (0.33)	Uncommon	Common	30% at surface	Common offshore Santa Barbara
Bryde's whale	<i>Balaenoptera edeni</i>	CA (1991/93)	24 (2.0)	Uncommon	Uncommon	20% at surface	Possible northern extent of ETP stock
Sei (or Bryde's) whale	<i>Balaenoptera borealis</i> (or <i>edeni</i>)	CA (1991/93)	36 (0.71)	Uncommon	Uncommon	20% at surface	Pelagic distribution in temperate waters
Northern right whale	<i>Eubalaena glacialis</i>	CA (1991/92)	16 (1.11)**	Rare	Rare	30% at surface	Coastal distribution; scattered sightings in recent years in coastal CA waters
ODONTOCETES							
Sperm whale	<i>Physeter macrocephalus</i>	CA (1991/93)	1,231 (0.39)	Common	Common	10% at surface	Year-round offshore CA; usually seaward of shelf
Pygmy sperm whale	<i>Kogia breviceps</i>	CA (1991/93)	3,145 (0.54)	Uncommon	Uncommon	20% at surface	Usually seaward of shelf; no separate estimate for <i>K. simus</i>
Killer whale	<i>Orcinus orca</i>	CA (1991/93)	747 (0.71)	Uncommon	Uncommon	30% at surface	Cosmopolitan sp.; infrequent sightings offshore CA
Baird's beaked whale	<i>Berardius bairdii</i>	CA (1991/93)	380 (0.53)	Uncommon	Common	10% at surface	Continental slope and basin habitat
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	CA (1991/93)	9,163 (0.52)	Unknown	Unknown	10% at surface	Continental slope and basin habitat
Beaked whales spp.	<i>Mesoplodon</i> spp.	CA (1991/93)	1,378 (0.58)	Unknown	Unknown	10% at surface	Continental slope and basin habitat
Risso's dolphin	<i>Grampus griseus</i>	CA (1991/93)	10,720 (0.41)	Common	Uncommon	30% at surface	So. CA = shelf & slope; N. of Pt. Conception = slope and basin
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	CA (1991/93)	1,004 (0.37)	Common	Uncommon	30% at surface	So. CA population reduced post 1982 El Nino
Northern right whale dolphin	<i>Lissodelphis borealis</i>	CA (1996)	9,131 (0.77)	Common	Uncommon	30% at surface	So. CA = shelf & slope; N. of Pt. Conception = slope and basin
Long-beaked common dolphin	<i>Delphinus capensis</i>	CA (1996)	72,251 (0.83)	Uncommon	Common	30% at surface	So. CA shelf, usually <50 nm from shore
Short-beaked common dolphin	<i>Delphinus delphis</i>	CA (1991/93)	372,425 (0.22)	Uncommon	Common	30% at surface	So. CA = shelf & slope; N. of Pt. Conception = slope and basin
Striped dolphin	<i>Stenella coeruleoalba</i>	CA (1991/93)	24,910 (0.31)	Uncommon	Common	30% at surface	Offshore waters, usually >100 nm from shore
Pacific white-sided dolphin	<i>Lagenorhynchus obliquidens</i>	CA (1996)	60,026 (0.84)	Common	Uncommon	30% at surface	Continental shelf and slope water
Bottlenose dolphin	<i>Tursiops truncatus</i>	CA (1991/93)	1,850 (0.50)	Common	Common	30% at surface	Continental shelf, usually S. of Pt. Conception and often < ~1 nm from shore
Dall's porpoise	<i>Phocoenoides dalli</i>	CA (1996)	60,756 (0.50)	Common	Uncommon	30% at surface	So. CA = shelf & slope; N. of Pt. Conception = slope and basin
Harbor porpoise	<i>Phocoena phocoena</i>	Central CA	4,120 (0.22)***	Common	Common	30% at surface	Pt. Conception & north, usually < 10 nm from shore
PINNIPEDS							
California sea lion	<i>Zalophus c. californianus</i>	U.S.	167,000-188,000 (n/a)***	Common	Common	30% at surface	Breed on Channel Is. May-June; Molt females Aug-Oct, males Nov-Feb
Harbor seal	<i>Phoca vitulina richardsi</i>	CA	30,293 (na)***	Common	Common	30% at surface	Breed So. CA islands & central shore March-May; Molt May-August
Northern elephant seal	<i>Mirounga angustirostris</i>	CA Breeding	84,000 (n/a)***	Common	Uncommon	10% at surface	Breed on Channel Is. Dec-March; Molt females Apr-May, males Jun-Aug
Guadalupe fur seal	<i>Arctocephalus townsendi</i>	CA/Mexico	7,408 (n/a)***	Uncommon	Common	30% at surface	Haul out on Channel Is.; breed June-July in Mex; Molt undetermined
Northern fur seal	<i>Callorhinus ursinus</i>	San Miguel Is.	10,036 (n/a)***	Uncommon	Common	30% at surface	Breed San Miguel Is. June-August; Molt undetermined
MUSTELIDS							
Sea otter	<i>Enhydra lutris nereis</i>	Experimental pop.	< ~20*	Uncommon	Uncommon	50% at surface	Small population, with some breeding, near San Nicolas Is.

NOTES**Population Estimates:**

Barlow 1997: Table 5

* Hobbs et al. in press

** Forney et al. 1995

*** Barlow et al. 1997

^ Benz 1996

(n/a) = not available

Seasonal Index:

Barlow 1995

Forney et al. 1995

Dive Profile:

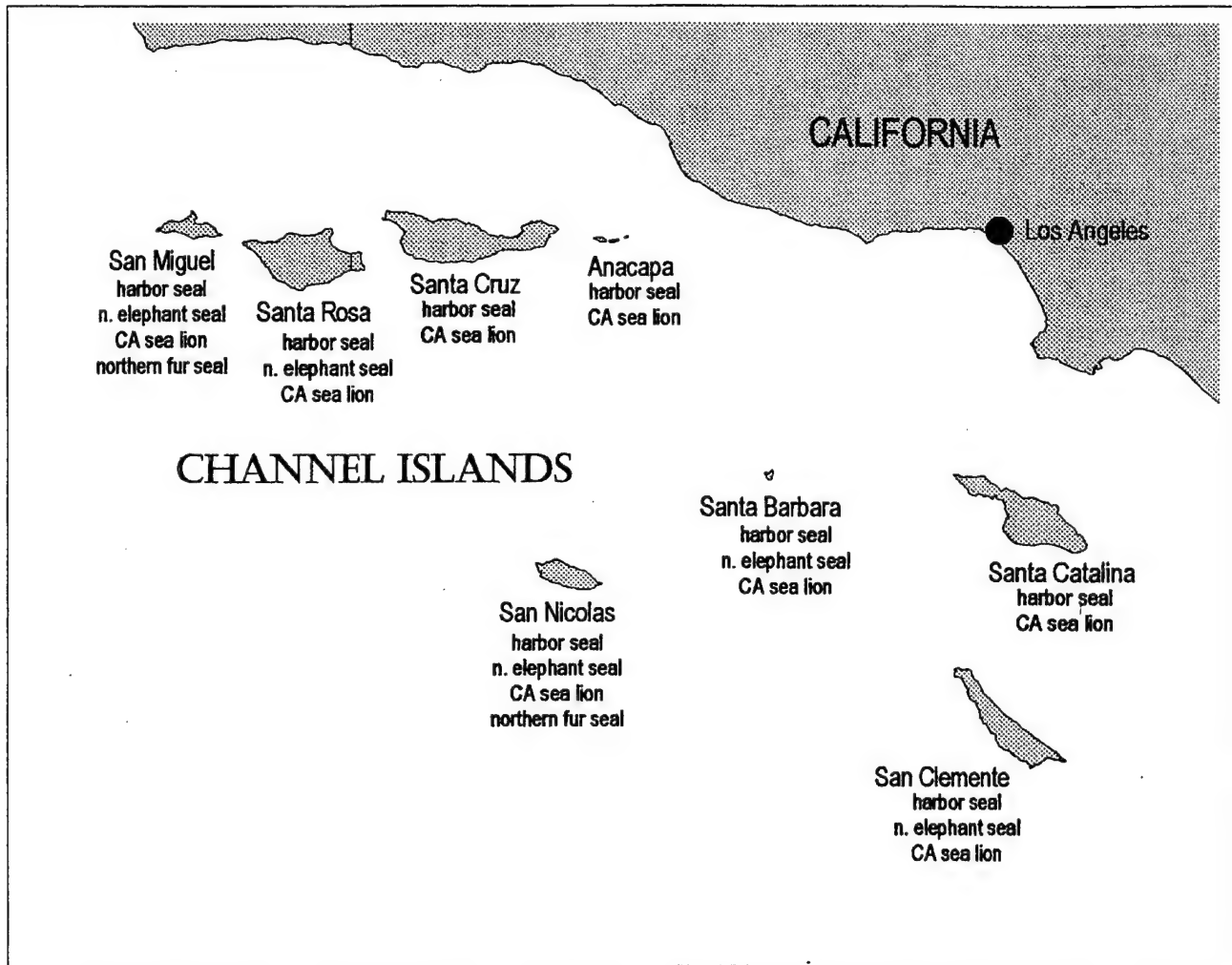
Leatherwood et al. 1983

Ridgway and Harrison 1985, 1989

Reeves et al. 1992

note: pinniped dive profile for 'at sea' interval only

Pinnipeds of the Southern California Bight



Pinniped occurrence in the Southern California Bight. * indicates juvenile.

Species		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Harbor seal	Primary behavior	feed	feed	pup/ mate	pup/ mate	molt	molt	molt	molt	feed	feed	feed	feed
	Sex/Age Class	♂ ♀	♂ ♀	♂ ♀	♂ ♀	♂ ♀	♂ ♀	♂ ♀	♂ ♀	♂ ♀	♂ ♀	♂ ♀	♂ ♀
N. elephant seal	Primary behavior	pup/ mate	pup/ mate		molt	molt	molt	molt	molt				pup/ mate
	Sex/Age Class	♂ ♀	♂ ♀		♀ *	♀ *	♂	♂	♂				♂ ♀
CA sea lion	Primary behavior	molt	molt			pup/ mate	pup/ mate	pup/ mate	feed	molt	molt	molt	molt
	Sex/Age Class	♂	♂			♂ ♀	♂ ♀	♂ ♀	♀ *	♀ *	♀	♂	♂
N. fur seal	Primary behavior	feed	feed	feed		pup/ mate	pup/ mate	pup/ mate	pup/ mate	pup/ mate	pup/ mate	pup/ mate	
	Sex/Age Class	♀ *	♀ *	♀ *		♂	♂ ♀	♀	♀	♀	♀	♀	

Gulf of Mexico

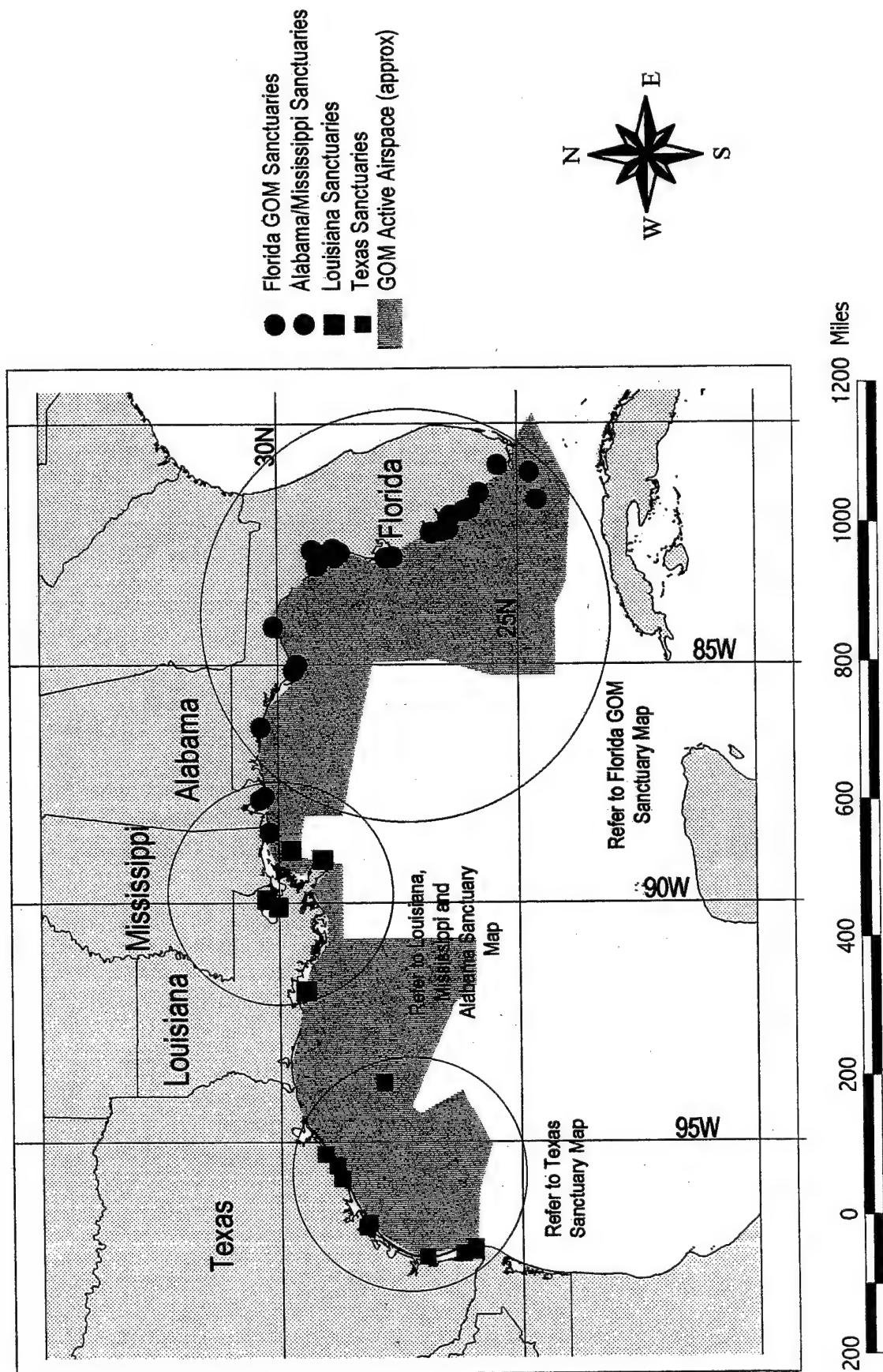


Table 3. Marine mammal population estimates, seasonal occurrences and dive profiles for Gulf of Mexico (TX to FL).

Common Name	Scientific Name	Stock	Pop. Est. (CV)	Seasonal	Index	Dive Profile	Comment
				Spr-Sum	Aut-Win		
MYSTICETES							
Fin whale	<i>Balaenoptera physalus</i>	N GOM	No estimate*	Rare	Rare	20% at surface	Few sightings on shelf between FL panhandle and LA
Minke whale	<i>Balaenoptera acutorostrata</i>	N GOM	No estimate*	Rare	Rare	20% at surface	Coastal sightings, especially FL Keys
Humpback whale	<i>Megaptera novaeangliae</i>	N GOM	No estimate*	Rare	Rare	20% at surface	West FL coast to LA
Bryde's whale	<i>Balaenoptera edeni</i>	N GOM	35 (1.10)	Common	Common	20% at surface	Shelf edge DeSoto Canyon and offshore FL panhandle
ODONTOCETES							
Sperm whale	<i>Physeter macrocephalus</i>	N GOM	530 (0.31)	Common	Common	10% at surface	Most common large whale in GOM; usually in slope/basin habitat
Dwarf/Pygmy Sperm whale	<i>Kogia spp.</i>	N GOM	547 (0.28)	Common	Common	20% at surface	Continental slope and basin habitat
Killer whale	<i>Orcinus orca</i>	N GOM	277 (0.42)	Common	Uncommon	30% at surface	Continental slope and basin habitat
Pygmy Killer whale	<i>Feresa attenuata</i>	N GOM	518 (0.81)	Uncommon	Uncommon	30% at surface	Continental slope and basin habitat
False Killer whale	<i>Pseudorca crassidens</i>	N GOM	381 (0.62)	Common	Common	30% at surface	Continental slope and basin habitat
Cuvier's Beaked whale	<i>Ziphius cavirostris</i>	N GOM	30 (0.50)	Common	Common	10% at surface	Continental slope and basin habitat
Beaked whales spp.	<i>Mesoplodon spp.</i>	N GOM	117 (0.38)	Unknown	Unknown	10% at surface	Continental slope and basin habitat
Risso's dolphin	<i>Grampus griseus</i>	N GOM	2,749 (0.27)	Common	Uncommon	30% at surface	Continental shelf and slope habitat
Short-finned Pilot whale	<i>Globicephala macrorhynchus</i>	N GOM	353 (0.89)	Uncommon	Uncommon	30% at surface	Continental shelf and slope habitat
Melon-headed whale	<i>Peponocephala electra</i>	N GOM	3,965 (0.39)	Common	Common	30% at surface	Continental slope and basin habitat
Fraser's dolphin	<i>Lagenodelphis hosei</i>	N GOM	127 (0.90)	Common	Common	30% at surface	Continental slope and basin habitat
Atlantic Spotted dolphin	<i>Stenella frontalis</i>	N GOM	3,213 (0.44)	Common	Uncommon	30% at surface	Continental shelf and shelf-edge habitat
Pantropical Spotted dolphin	<i>Stenella attenuata</i>	N GOM	31,320 (0.20)	Common	Common	30% at surface	Continental slope and basin habitat
Striped dolphin	<i>Stenella coeruleoalba</i>	N GOM	4,858 (0.44)	Common	Common	30% at surface	Continental slope and basin habitat
Spinner dolphin	<i>Stenella longirostris</i>	N GOM	6,316 (0.43)	Uncommon	Uncommon	30% at surface	Continental slope and basin habitat
Clymene dolphin	<i>Stenella clymene</i>	N GOM	5,571 (0.37)	Common	Common	30% at surface	Continental slope and basin habitat
Rough-toothed dolphin	<i>Steno bredanensis</i>	N GOM	852 (0.31)	Uncommon	Uncommon	30% at surface	Continental slope and basin habitat
Bottlenose dolphin	<i>Tursiops truncatus</i>	GOM (OCS)	50,247 (0.18)	Common	Common	30% at surface	Outer Continental Shelf stock; habitat ~18m-183m isobaths
		GOM (SES)	5,618 (0.26)	Common	Common	30% at surface	Shelf Edge & Slope stock; habitat >183m isobath
		W GOM (CS)	3,499 (0.21)	Common	Common	30% at surface	Coastal Stock; habitat <18m isobath
		N GOM (CS)	4,191 (0.21)	Common	Common	30% at surface	Coastal Stock; habitat <18m isobath
		E GOM (CS)	9,912 (0.12)	Common	Common	30% at surface	Coastal Stock; habitat <18m isobath
		GOM (S&E)	combined est. = 5,141 (n/a)	Common	Common	30% at surface	Sound and Estuarine Stocks; discrete geo-based communities
SIRENIAN							
Florida manatee	<i>Trichechus manatus</i>	W. FL	count = 949** (n/a)	Common	Common	90% at surface	Best count; associated w/ warm coastal and riverine waters

NOTES**Population Estimates:**

Waring et al. 1997

*Jefferson and Schiro 1997

**USFWS 1995

(n/a) = not available

Seasonal Index:

Jefferson and Schiro 1997

Jefferson 1996

Dive Profile:

Leatherwood et al. 1983

Ridgway and Harrison 1985, 1989

Reeves et al. 1992

Southwest Atlantic

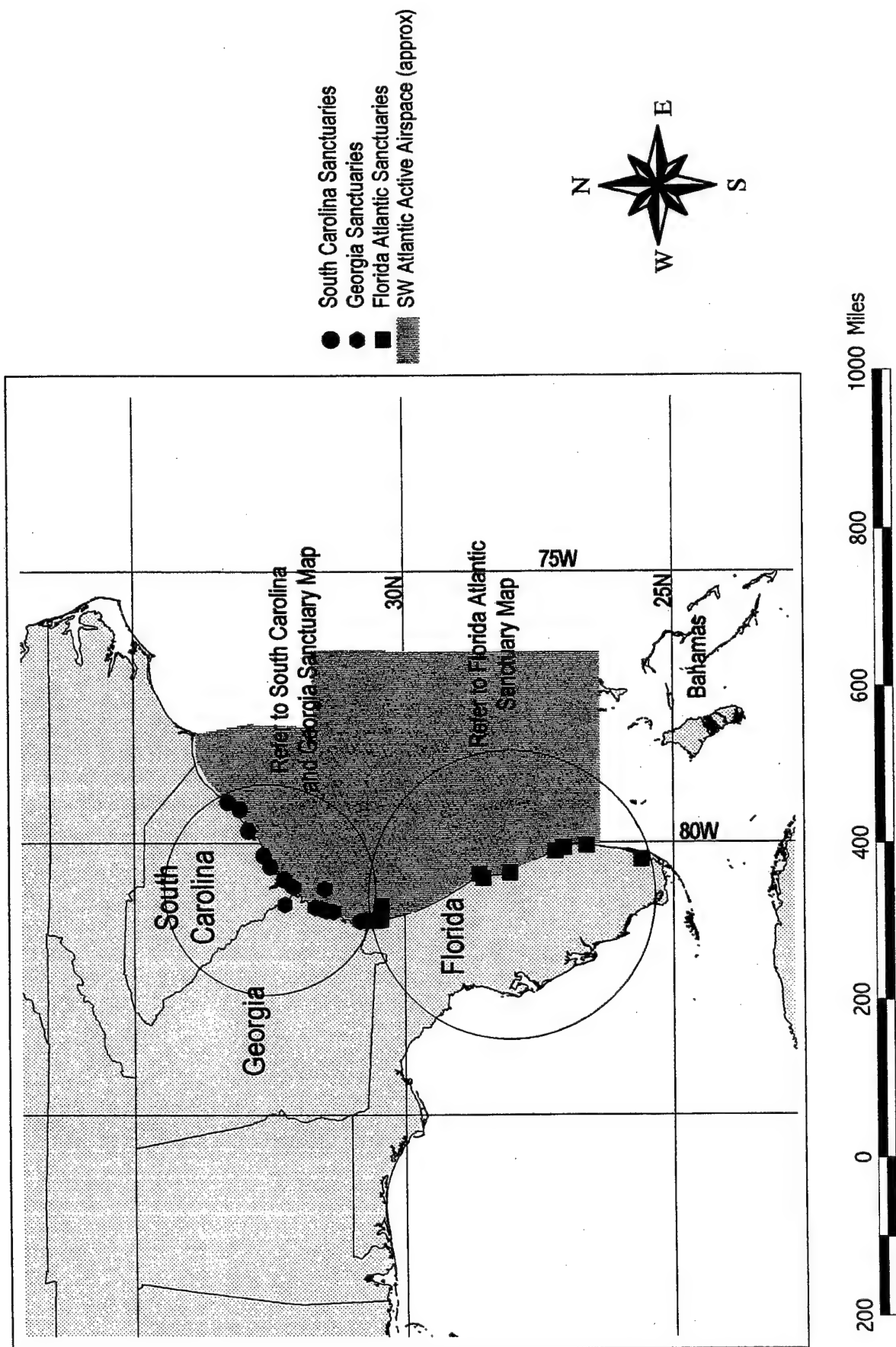


Table 4. Marine mammal population estimates, seasonal occurrences and dive profiles for Southwest Atlantic (FL to SC).

Common Name	Scientific Name	Stock	Pop. Est. (CV)	Seasonal	Index	Dive Profile	Comment
				Wtr-Spr	Sum-Aut		
MYSTICETES							
Blue whale	<i>Balaenoptera musculus</i>	WN ATL	No estimate	Rare	Rare	20% at surface	No population estimate for waters south of Cape Hatteras; calls tracked via SOSUS (Gagnon and Clark 1993)
Fin whale	<i>Balaenoptera physalus</i>	WN ATL	2,700 (0.59)	Common	Uncommon	20% at surface	Partial-range (1991-92) population estimate, calve mid-Atlantic Oct-Jan
Sei whale	<i>Balaenoptera borealis</i>	WN ATL	253 (0.63)	Common	Uncommon	20% at surface	Poor/old population estimate for spring season (CeTAP 1978-82)
Minke whale	<i>Balaenoptera acutorostrata</i>	CAN EC	2,650 (0.31)	Common	Uncommon	20% at surface	Partial-range (1991-92) population estimate for one (CAN EC) of four stocks identified in the North Atlantic
Humpback whale	<i>Megaptera novaeangliae</i>	WN ATL	5,543 (0.16)	Common	Uncommon	30% at surface	Partial range-estimate; winter in Caribbean north of Dominican Republic to waters near Bermuda
Northern right whale	<i>Eubalaena glacialis</i>	WN ATL	Census = 295 (n/a)	Common	Uncommon	40% at surface	Census (295 photo-ID individuals) is minimum estimate ; critical breeding habitat offshore northern FL & south GA
ODONTOCETES							
Sperm whale	<i>Physeter macrocephalus</i>	WN ATL	2,698 (0.67)	Common	Uncommon	10% at surface	1995 population estimate; females and juveniles in subtropics FL to Caribbean (Watkins and Moore 1982)
Dwarf/Pygmy sperm whale	<i>Kogia spp.</i>	WN ATL	420 (0.60)	Unknown	Unknown	20% at surface	1992 population estimate for Miami-to-Cape Hatteras from line-transect vessel survey
Killer whale	<i>Orcinus orca</i>	WN ATL	No estimate	Uncommon	Uncommon	30% at surface	Largest single sighting = 40 whales in southern Gulf of Maine, September 1979
Pygmy killer whale	<i>Feresa attenuata</i>	WN ATL	No estimate	Unknown	Unknown	30% at surface	Largest single sighting = 6 whales during 1992 Miami-to-Cape Hatteras line-transect vessel survey
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	WN ATL	No estimate	Unknown	Unknown	10% at surface	Cosmopolitan distribution; generally seaward of continental slope
Beaked whales spp.	<i>Mesoplodon spp.</i>	WN ATL	1,519 (0.69)	Unknown	Unknown	10% at surface	1995 population estimate for VA-Gulf of St. Lawrence survey; strandings to FL coast
Risso's dolphin	<i>Grampus griseus</i>	WN ATL	16,818 (0.52)	Common	Uncommon	30% at surface	Associated w/ Gulf Stream north wall & warm core rings
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	WN ATL	749 (0.64)	Common	Uncommon	30% at surface	Associated w/ tropical-warm temperate waters
Common dolphin	<i>Delphinus delphis</i>	WN ATL	22,215 (0.45)	Common	Uncommon	30% at surface	Associated w/ tropical-temperate waters
Atlantic/Pantropical spotted dolphin	<i>Stenella spp.</i>	WN ATL	4,772 (1.27)	Common	Common	30% at surface	Associated w/ tropical-warm temperate waters
Striped dolphin	<i>Stenella coeruleoalba</i>	WN ATL	31,669 (0.73)	Common	Common	30% at surface	Associated w/ tropical-temperate waters; revised CeTAP estimate (1982)
Spinner dolphin	<i>Stenella longirostris</i>	WN ATL	No estimate	Uncommon	Uncommon	30% at surface	Few sightings (presumably) due to offshore distribution
Bottlenose dolphin	<i>Tursiops truncatus</i>	WN ATL (OS)	13,453 (0.54)	Common	Common	30% at surface	Offshore Stock - associated w/ continental shelf break; strandings south to FL
		WN ATL (CS)	High count = 815 (n/a)	Common	Common	30% at surface	Coastal Stock - associated w/ continental shelf; count from NC-FL
PINNIPEDS							
Harbor seal	<i>Phoca vitulina</i>	WN ATL	Count = 28,810 (n/a)	Uncommon	Uncommon	30% at surface	Maine coast count; associated w/ temperate & subpolar waters; sightings and strandings south to GA
Hooded seal	<i>Cystophora cristata</i>	WN ATL	400,000-450,000	Uncommon	Uncommon	30% at surface	Range as far south as Puerto Rico and FL
SIRENIAN							
Florida manatee	<i>Trichechus manatus</i>	E. FL	Count = 907** (n/a)	Common	Common	90% at surface	Best count; associated w/ warm coastal and riverine waters

NOTES**Population Estimates:**

Waring et al. 1997

** USFSW 1995

Seasonal Index:

Waring et al. 1997

Leatherwood et al. 1983

Dive Profile:

Leatherwood et al. 1983

Ridgway and Harrison 1985, 1989

Reeves et al. 1992

note: pinniped dive profile for at sea' interval only

Northwest Atlantic

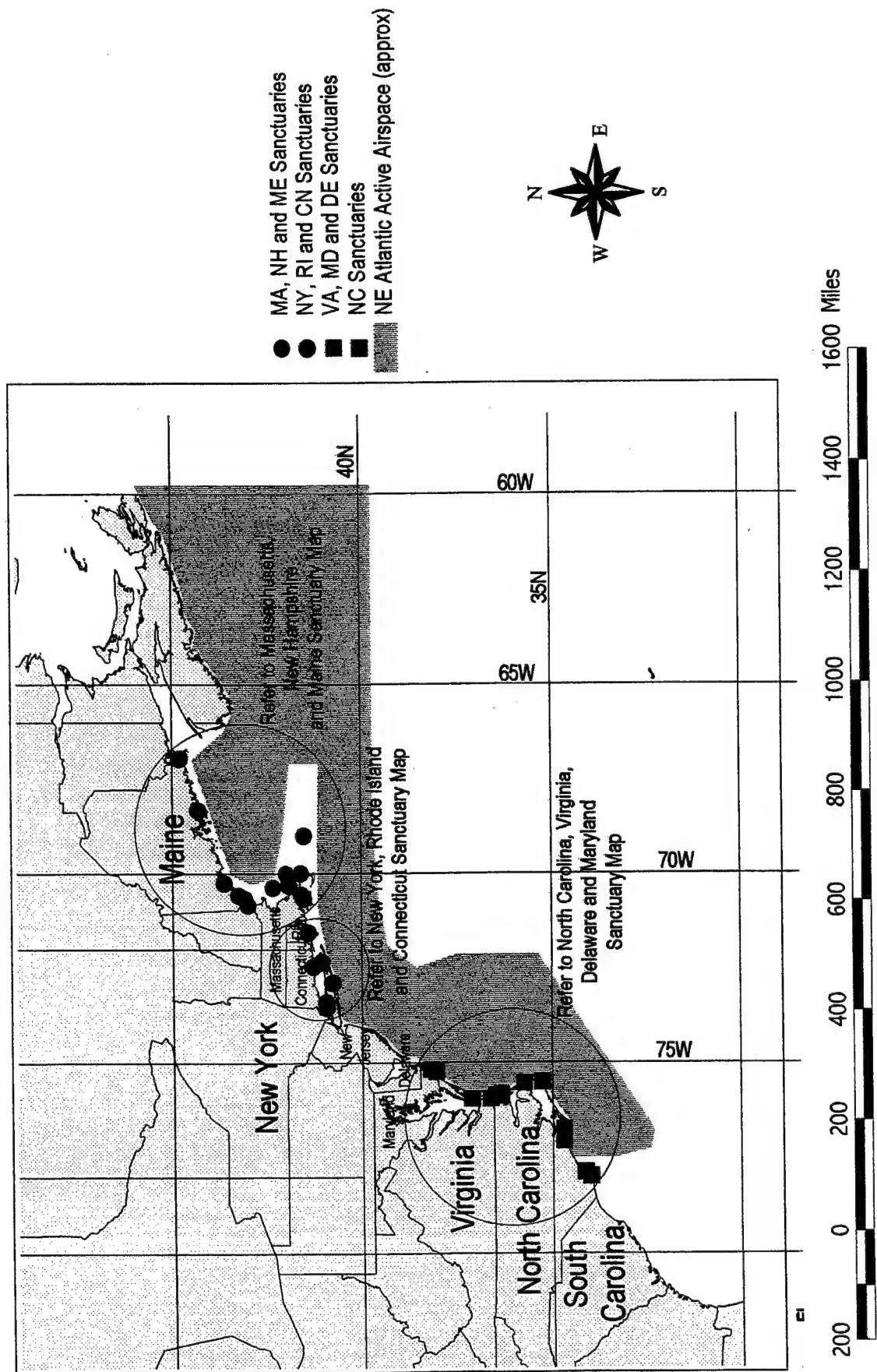


Table 5. Marine mammal population estimates, seasonal occurrences and dive profiles for Northwest Atlantic (NC to ME).

Common Name	Scientific Name	Stock	Pop. Est. (CV)	Seasonal	Index	Dive Profile	Comment
				Wtr-Spr	Sum-Aut		
MYSTICETES							
Blue whale	<i>Balaenoptera musculus</i>	WN ATL	Count = 308 (n/a)	Uncommon	Uncommon	20% at surface	Catalog of 308 photo ID individuals from Gulf of St. Lawrence area
Fin whale	<i>Balaenoptera physalus</i>	WN ATL	2,700 (0.59)	Common	Common	20% at surface	Partial-range (1991-92) population estimate; calve mid- Atlantic Oct-Jan
Sei whale	<i>Balaenoptera borealis</i>	WN ATL	253 (0.63)	Uncommon	Common	20% at surface	Poor/old population estimate for spring season (CeTAP 1978- 82)
Minke whale	<i>Balaenoptera acutorostrata</i>	CAN EC	2,650 (0.31)	Uncommon	Common	20% at surface	Partial-range (1991-92) population estimate for one (CAN EC) of four stocks identified in the North Atlantic
Humpback whale	<i>Megaptera novaeangliae</i>	WN ATL	5,543 (0.16)	Uncommon	Common	30% at surface	Partial-range estimate; five feeding-aggregations in WN ATL
Northern right whale	<i>Eubalaena glacialis</i>	WN ATL	Census = 295 (n/a)	Uncommon	Common	40% at surface	Census (295 photo ID individuals) is a minimum estimate; critical feeding habitat offshore MA
ODONTOCETES							
Sperm whale	<i>Physeter macrocephalus</i>	WN ATL	2,698 (0.67)	Uncommon	Common	10% at surface	1995 pop. estimate, whales generally seaward of shelf and often associated with edge and warm core eddies of the Gulf Stream (Waring et al. 1993; Griffin 1998)
Dwarf/Pygmy sperm whale	<i>Kogia spp.</i>	WN ATL	420 (0.60)	Unknown	Unknown	20% at surface	1992 population estimate for Miami-to-Cape Hatteras from line-transect vessel survey
Killer whale	<i>Orcinus orca</i>	WN ATL	No estimate	Uncommon	Uncommon	30% at surface	Largest single sighting = 40 whales in southern Gulf of Maine, September 1979
Pygmy killer whale	<i>Feresa attenuata</i>	WN ATL	No estimate	Unknown	Unknown	30% at surface	Largest single sighting = 6 whales during 1992 Miami-to- Cape Hatteras line-transect vessel survey
Northern bottlenose whale	<i>Hyperoodon ampullatus</i>	WN ATL	No estimate	Rare	Rare	10% at surface	Pop est. = 230 (95% CI= 160-360) for 'the Gully', a discrete depth feature N. of Sable Is. Nova Scotia CAN (Whitehead et al. 1997)
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	WN ATL	No estimate	Rare	Rare	10% at surface	Considered rare off NE U.S. coast; most sightings in late spring or summer usually along continental shelf edge
Beaked whales spp.	<i>Mesoplodon spp.</i>	WN ATL	1,519 (0.69)	Unknown	Unknown	10% at surface	1995 population estimate for VA-Gulf of St. Lawrence survey
Risso's dolphin	<i>Grampus griseus</i>	WN ATL	16,818 (0.52)	Common	Common	30% at surface	Associated w/ Gulf Stream north wall & warm core rings
Long/Short-finned pilot whale	<i>Globicephala spp.</i>	WN ATL	8,176 (0.65)	Common	Common	30% at surface	Associated w/ Gulf Stream north wall & thermal fronts
White-sided dolphin	<i>Lagenorhynchus acutus</i>	WN ATL	27,200 (0.43)	Uncommon	Common	30% at surface	Associated w/ temperate and sub-polar waters; continental shelf, to ~100m depth contour
White-beaked dolphin	<i>Lagenorhynchus albirostris</i>	WN ATL	573 (0.69)	Common	Common	30% at surface	Poor/old population estimate for spring season (CeTAP 1978-82); associated w/ temperate and sub-polar waters
Common dolphin	<i>Delphinus delphis</i>	WN ATL	22,215 (0.45)	Uncommon	Common	30% at surface	Associated w/ tropical-temperate waters
Atlantic (& pantropical) spotted dolphin	<i>Stenella spp.</i>	WN ATL	4,772 (1.27)	Uncommon	Common	30% at surface	Associated w/ tropical-warm temperate waters
Striped dolphin	<i>Stenella coerulescens</i>	WN ATL	31,669 (0.73)	Uncommon	Common	30% at surface	Associated w/ tropical-temperate waters
Spinner dolphin	<i>Stenella longirostris</i>	WN ATL	No estimate	Rare	Rare	30% at surface	Few sightings (presumably) due to offshore distribution
Bottlenose dolphin	<i>Tursiops truncatus</i>	WN ATL (OS)	13,453 (0.54)	Common	Common	30% at surface	Offshore Stock - associated w/ continental shelf break; July- Sep. '95 estimate VA-Gulf St. Lawrence
		WN ATL (CS)	High count = 1,667 (n/a)	Common	Common	30% at surface	Coastal Stock - associated w/ continental shelf; count from NC to NJ
Harbor porpoise	<i>Phocoena phocoena</i>	GM/BF	54,300 (0.14)	Uncommon	Common	30% at surface	Gulf of Maine/Bay of Fundy stock; average of 1991, 1992 and 1995 population estimates; concentrate nearshore GM in summer
PINNIPEDS							
Harbor seal	<i>Phoca vitulina</i>	WN ATL	Count = 28,810 (n/a)	Common	Common	30% at surface	Summer 1993 Maine coast count; assoc. w/ temperate & subpolar waters; pup/breed in May-June
Gray seal	<i>Halichoerus grypus</i>	Sable Is. to Gulf St. Law	Count =143,000 (n/a)	Common	Uncommon	30% at surface	1993-1994 population estimates; pup/breed from late Sep. to early March; Molt May-June
		Maine coast offshore MA	500-1000 Count = 2,035 (n/a)	Common	Uncommon		
Harp seal	<i>Phoca groenlandica</i>	N. Atlantic	3 million	Common	Uncommon	30% at surface	Population estimate for 1990; pup/breed from mid-Feb to April; Molt April
Hooded seal	<i>Cystophora cristata</i>	WN ATL	400,000- 450,000	Common	Uncommon	30% at surface	Population estimate from 'pup production' model (Stenson 1993); highly migratory; pup/breed in February

NOTES**Population Estimates:**

Waring et al. 1997
(n/a) = not available

Seasonal Index:

Waring et al. 1997
Leatherwood et al. 1983

Dive Profile:

Leatherwood et al. 1983
Ridgway and Harrison 1985, 1989
Reeves et al. 1992
note: pinniped dive profile for 'at sea' interval only

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APPENDIX

SANCTUARIES AND RESERVES SUMMARY TABLES

Contents

	Page No.
Overview.....	A-1
NORTHEAST PACIFIC	A-2
Washington	A-3
Oregon	A-5
SOUTHEAST PACIFIC	A-7
Mid-California	A-8
Southern California	A-10
GULF OF MEXICO.....	A-12
Texas.....	A-13
Louisiana, Mississippi and Alabama.....	A-15
Florida (GOM).....	A-17
SOUTHWEST ATLANTIC	A-20
Florida (Atlantic)	A-21
South Carolina and Georgia	A-23
NORTHWEST ATLANTIC	A-25
Virginia, Maryland, Delaware and North Carolina	A-26
New York, Rhode Island and Connecticut.....	A-28
Massachusetts, New Hampshire and Maine.....	A-30
References	A-32

OVERVIEW

This appendix presents information on a representative sample of coastal sanctuaries and reserves from each of the five regions of interest to the Air Force. Note that this is not a comprehensive list. There are sanctuaries and reserves that have not been included in this appendix for assorted reasons, including small geographic size, purpose or mission, and/or lack of information. This appendix is intended to acquaint Air Force personnel with the varied and numerous natural areas found along the coastlines of the contiguous United States and some of the marine animals that occur within them. Information in this appendix will aid planning and mitigation of various Air Force activities.

Many sanctuaries and reserves have been set aside specifically for protection of marine animals by providing critical habitat for feeding, nesting, mating and/or migrating. Many are multiple use areas in which some marine animals are protected and other marine animals are not. Some provide seasonal habitat only. Nearly all of the sanctuaries and reserves are administered by federal, state or local governments. Individuals desiring supplementary information about any of these areas should use the reference list as a starting point for additional inquiry.

The data fields included in the sanctuary and reserves tables are as follows:

Region	Identifier cross-referenced to species table in main report
Name	Name of sanctuary or reserve
Letter design	Letter identifier cross-referenced to specific sanctuary map
Size (acres)	Approximate size (where known)
Habitat types	Dominant habitat type(s) represented in sanctuary
Listed marine animals	Marine mammal, seabird and sea turtle species that are Federally listed as endangered or threatened
Special comments	Additional information pertaining to sanctuary (where necessary)
Info sources	Number designator cross-referenced to list of references
Admin	Agency responsible for administration of sanctuary
Street address	Street address for agency
City	City for agency
ST	State for agency
Zip	Zip code
Phone #	Area code plus phone number for agency

NORTHEAST PACIFIC

Washington Sanctuaries

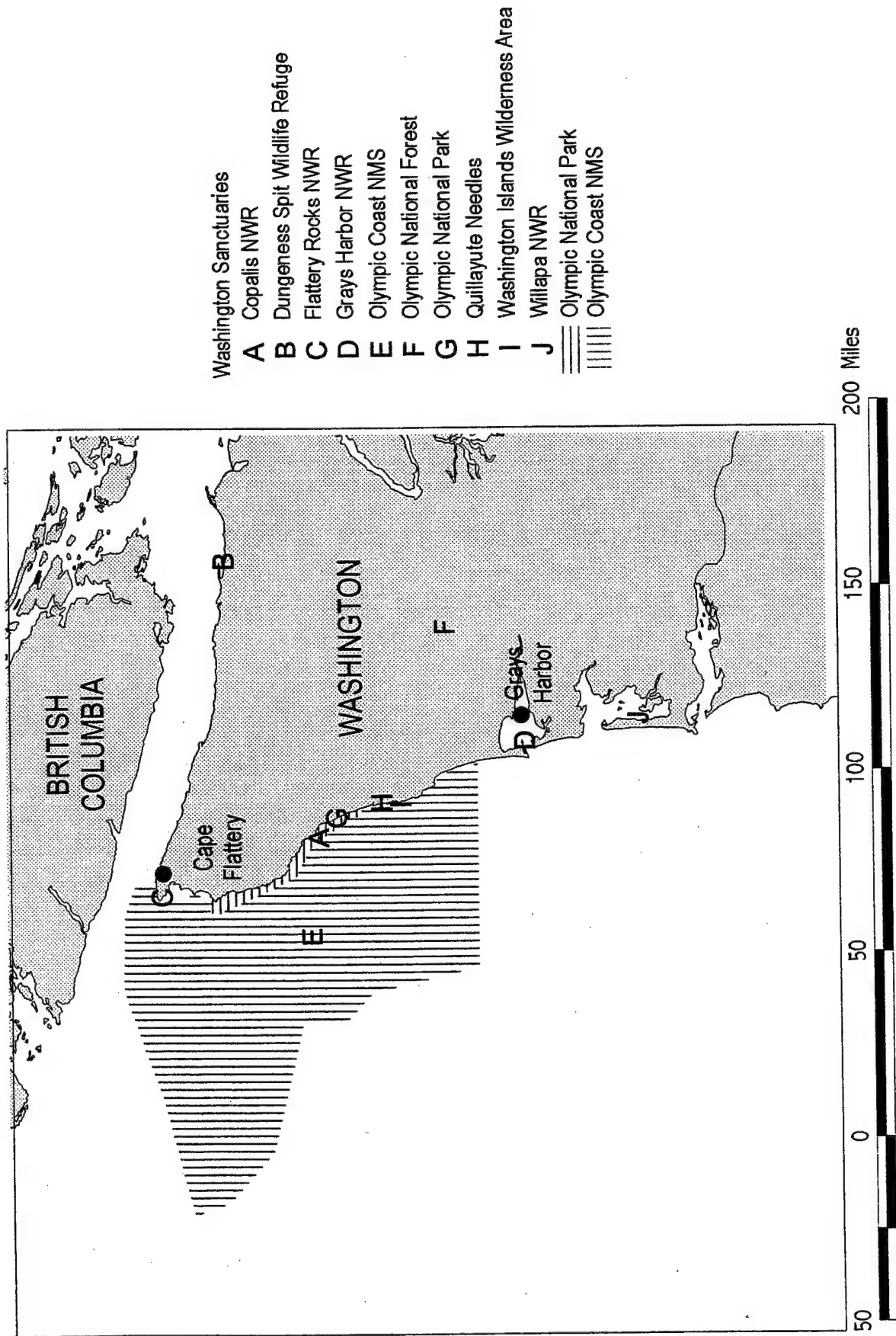


Table 1. Washington sanctuaries and reserves.

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	State	Zip Code	Phone #
NE Pac WA	Copalis National Wildlife Refuge	A		rocky islands, rocky intertidal	Steller sea lion, CA sea otter, Brandt's cormorant		6	US Fish and Wildlife Service	c/o Nisqually NWR, 100 Brown Farm Rd	Olympia	WA	98516	360 753 9467
NE Pac WA	Dungeness Spit Wildlife Refuge	B	631	sandy shore, salt marsh, forest	sea otter, Steller sea lion, blue whale, fin whale, humpback whale, sei whale, sperm whale, brown pelican, marbled murrelet		12	State of Washington	1638 Barr Road South	Port Angeles	WA	98382	206 457 8451
NE Pac WA	Flattery Rocks National Wildlife Refuge	C		rocky islands, rocky intertidal	Steller sea lion, CA sea otter, Brandt's cormorant		6	US Fish and Wildlife Service	c/o Nisqually NWR, 100 Brown Farm Rd	Olympia	WA	98516	360 753 9467
NE Pac WA	Greys Harbor National Wildlife Refuge	D		salt marsh	brown pelican		6	US Fish and Wildlife Service	c/o Nisqually NWR, 100 Brown Farm Rd	Olympia	WA	98516	360 753 9467
NE Pac WA	Olympic Coast National Marine Sanctuary	E		rocky intertidal, kelp forest	marbled murrelet		5	NOAA Sanctuaries and Reserves Division	138 West First St	Port Angeles	WA	98362	360 457 8622
NE Pac WA	Olympic National Forest	F	632000	forest	marbled murrelet		10,11	US Forest Service	1835 Black Lake Blvd SW	Olympia	WA	98512- 5623	360 856 2400
NE Pac WA	Olympic National Park	G		forest	northern right whale, blue whale, fin whale, sei whale, humpback whale, sperm whale, gray whale, Steller sea lion, CA sea otter, harbor porpoise, brown pelican, Brandt's cormorant, Aleutian Canada Goose, marbled murrelet		9, 10	National Park Service	600 East Park Ave	Port Angeles	WA	98362- 6798	360 452 4501
NE Pac WA	Quillayute Needles	H		rocky islands, rocky intertidal	Steller sea lion, CA sea otter, Brandt's cormorant		6	US Fish and Wildlife Service	c/o Nisqually NWR, 100 Brown Farm Rd	Olympia	WA	98516	360 753 9467
NE Pac WA	Washington Islands Wilderness Area	I	450	rocky islands, rocky intertidal	Steller sea lion, CA sea otter, Brandt's cormorant		6	US Fish and Wildlife Service	c/o Nisqually NWR, 100 Brown Farm Rd	Olympia	WA	98516	360 753 9467
NE Pac WA	Willapa National Wildlife Refuge	J	5600	forest, tidal flats, freshwater marsh	brown pelican		6	US Fish and Wildlife Service	Box 910	Ilwaco	WA	98624	360 484 3482

Oregon Sanctuaries

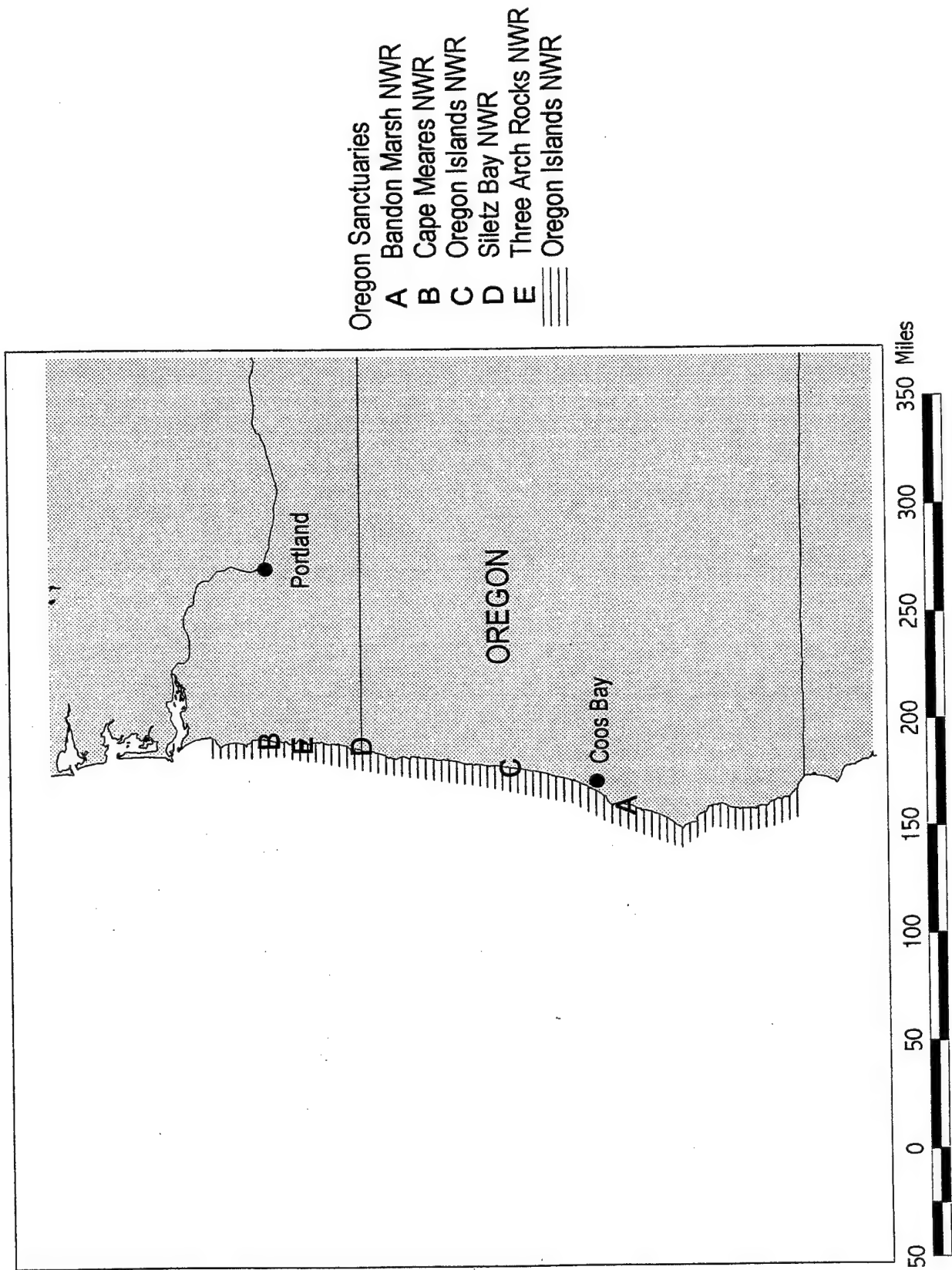
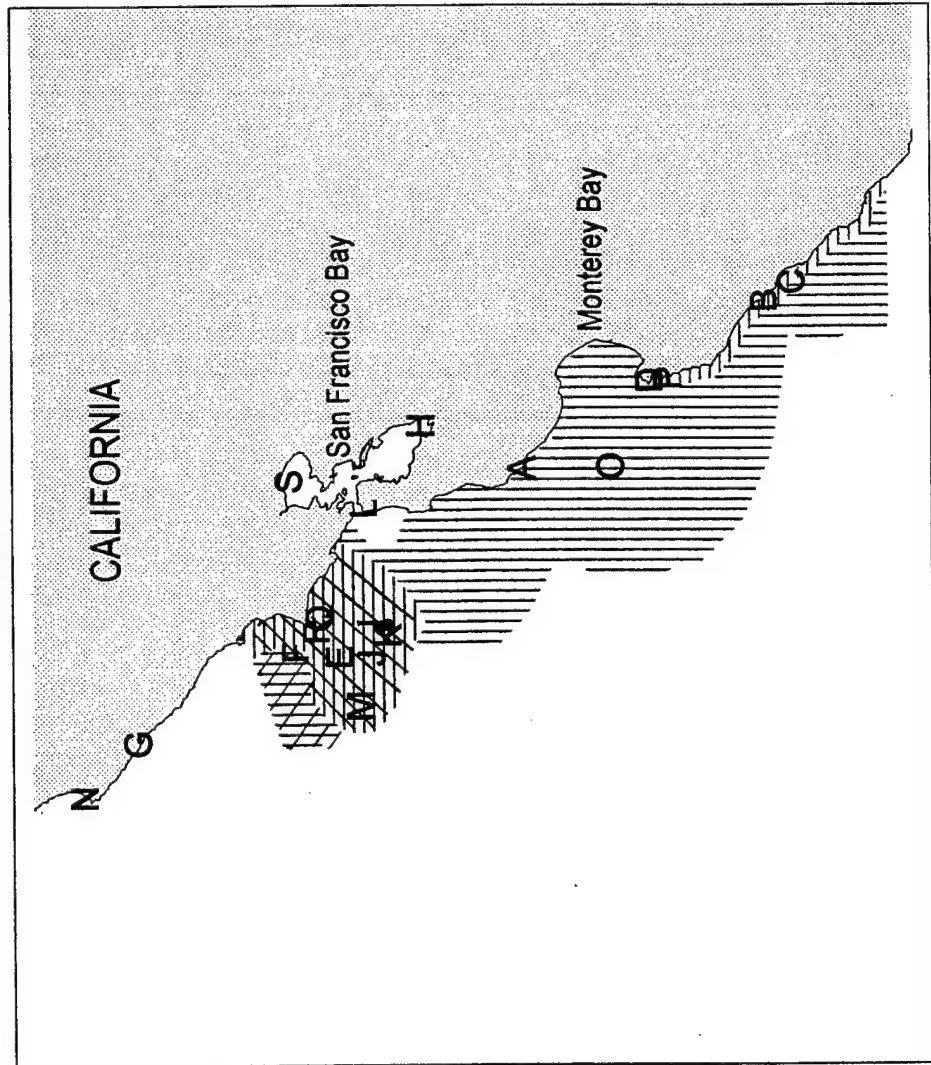


Table 2. Oregon sanctuaries and reserves.

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip	Phone #
NE Pac: OR	Bandon Marsh National Wildlife Refuge	A	289	salt marsh	brown pelican		6	US Fish and Wildlife Service	Western Oregon Complex, 26208 Finley Refuge Rd.	Corvallis	OR	97333	541 757 7236
NE Pac: OR	Cape Meares National Wildlife Refuge	B		forest	marbled murrelet		6	US Fish and Wildlife Service	Western Oregon Complex, 26208 Finley Refuge Rd.	Corvallis	OR	97333	541 757 7236
NE Pac: OR	Oregon Islands National Wildlife Refuge	C	575	rocky islands, rocky intertidal	Steller sea lion, brown pelican		6	US Fish and Wildlife Service	Western Oregon Complex, 26208 Finley Refuge Rd.	Corvallis	OR	97333	541 757 7236
NE Pac: OR	Siletz Bay National Wildlife Refuge	D	46	salt marsh	brown pelican		6	US Fish and Wildlife Service	Western Oregon Complex, 26208 Finley Refuge Rd.	Corvallis	OR	97333	541 757 7236
NE Pac: OR	Three Arch Rocks National Wildlife Refuge	E	17	rocky island	Steller sea lion, brown pelican		6	US Fish and Wildlife Service	Western Oregon Complex, 26208 Finley Refuge Rd.	Corvallis	OR	97333	541 757 7236

SOUTHEAST PACIFIC

Mid-California Sanctuaries



Mid-California Sanctuaries

- A** Ano Nuevo State Reserve
- B** Big Creek MRPB Ecological Reserve
- C** California Sea Otter Game Refuge
- D** Carmel Bay Ecological Reserve
- E** Central CA Coast Biosphere Reserve
- F** Cordell Bank National Marine Sanctuary
- G** Del Mar Landing Ecological Reserve
- H** Don Edwards San Francisco Bay NWR
- I** Farallon Island NWR
- J** Farallon Islands Ecological Reserve
- K** Farallon Islands Game Refuge
- L** Golden Gate National Recreation Area
- M** Gulf of the Farallones NMS
- N** Manchester State Park
- O** Monterey Bay NMS
- P** Point Lobos Ecological Reserve
- Q** Point Reyes Headlands Nat'l Res. Natural Area
- R** Point Reyes National Seashore
- S** San Pablo Bay NWR
- S** Cordell Bank National Marine Sanctuary
- S** California Sea Otter Game Refuge
- S** Farallon Islands Game Refuge
- S** Gulf of the Farallones National Marine Sanctuary
- S** Monterey Bay National Marine Sanctuary

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Table 3. Mid-California sanctuaries and reserves.

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
SE Pac: mid-CA	Ano Nuevo State Reserve	A	4000	sandy shore, rocky islands	Steller sea lion	harassment and disturbance of wild animals prohibited	6	CA Dept Parks and Recreation	New Years Creek Rd	Pescadero	CA	94060	415 879 2025
SE Pac: mid-CA	Big Creek Marine Resources Protection Act Ecological Reserve	B	1674	rocky intertidal, kelp forest	brown pelican	no aircraft except by authorized research permit	1	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: mid-CA	California Sea Otter Game Refuge	C	192300	sandy shore, kelp forest	sea otter	no aircraft <1000' except by permit	1,2	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: mid-CA	Carmel Bay Ecological Reserve	D	1652	rocky intertidal, kelp forest	sea otter	no aircraft except by authorized research permit	7	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: mid-CA	Central CA Coast Biosphere Reserve	E	1000012	tidal flats, reefs, littoral ocean, tidal flats/salt marsh, deep benthos	blue, fin, humpback and sperm whales, and Steller sea lions		1						
SE Pac: mid-CA	Cordell Bank National Marine Sanctuary	F	332400	seamount, rocky intertidal	blue, fin, humpback and sperm whales		1,2,5	NOAA Sanctuaries and Reserves Division	Fort Mason Building #201	San Francisco	CA	94123	415 556 3509
SE Pac: mid-CA	Del Mar Landing Ecological Reserve	G	60	rocky intertidal		no aircraft except by authorized research permit	6	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: mid-CA	Don Edwards San Francisco Bay National Wildlife Refuge	H		salt marsh	brown pelican, CA least tern		6	US Fish and Wildlife Service	San Francisco Bay Complex, PO Box 524	Newark	CA	94560	510 792 0222
SE Pac: mid-CA	Farallon Island National Wildlife Refuge	I	211	rocky islands	Steller sea lion, brown pelican		6	US Fish and Wildlife Department	PO Box 524	Newark	CA	94560	415 792 0222
SE Pac: mid-CA	Farallon Islands Ecological Reserve	J		rocky islands	Steller sea lion		6	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: mid-CA	Farallon Islands Game Refuge	K	11262	rocky islands	Steller sea lion	no helicopter <1000' except by permit	1	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: mid-CA	Golden Gate National Recreation Area	L	5885	sandy shore, rocky intertidal, tidal flats/salt marsh			9	National Park Service	Fort Mason Building #201	San Francisco	CA	94123	
SE Pac: mid-CA	Gulf of the Farallones National Marine Sanctuary	M	792804	tidal flats, reefs, littoral ocean, tidal flats/salt marsh, deep benthos	blue, fin, humpback and sperm whales, and Steller sea lions	no aircraft <1000' except by permit	1,2,5	NOAA Sanctuaries and Reserves Division	Fort Mason Building #201	San Francisco	CA	94123	415 556 3509
SE Pac: mid-CA	Manchester State Park/Arena Rock Marine Natural Preserve	N	3657	sandy shore, kelp forest	unk		1	CA Dept of Parks and Recreation	PO Box 440	Mendocino	CA	95460	707 862 2463
SE Pac: mid-CA	Monterey Bay National Marine Sanctuary	O	336679	submarine canyon, rocky intertidal, kelp forest, sandy shore	blue, fin, humpback, right and sperm whales, Steller sea lions, Guadalupe fur seals, sea otters, brown pelicans and marbled murrelets	no aircraft <1000' except by permit	1,2,3	NOAA Sanctuaries and Reserves Division	299 Foam St, #D	Monterey	CA	93940	408 647 4201
SE Pac: mid-CA	Point Lobos Ecological Reserve	P	775	kelp forest, rocky intertidal	sea otter	no aircraft except by authorized research permit	8	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: mid-CA	Point Reyes Headlands National Research Natural Area	Q	640	kelp forest, rocky intertidal			6				CA		
SE Pac: mid-CA	Point Reyes National Seashore	R	6009	tidal flats, sandy shore	blue, fin, humpback, sei and sperm whales, Steller sea lions, sea otters, brown pelicans, Townsend's shearwaters, and least terns		1	National Park Service		Pl. Reyes Station	CA	94956	415 663 1092
SE Pac: mid-CA	San Pablo Bay National Wildlife Refuge	S		salt marsh/tidal flat	brown pelican, CA least tern		6	US Fish and Wildlife Service	PO Box 2012	Valejo	CA	94592	707 552 6213

Southern California Sanctuaries

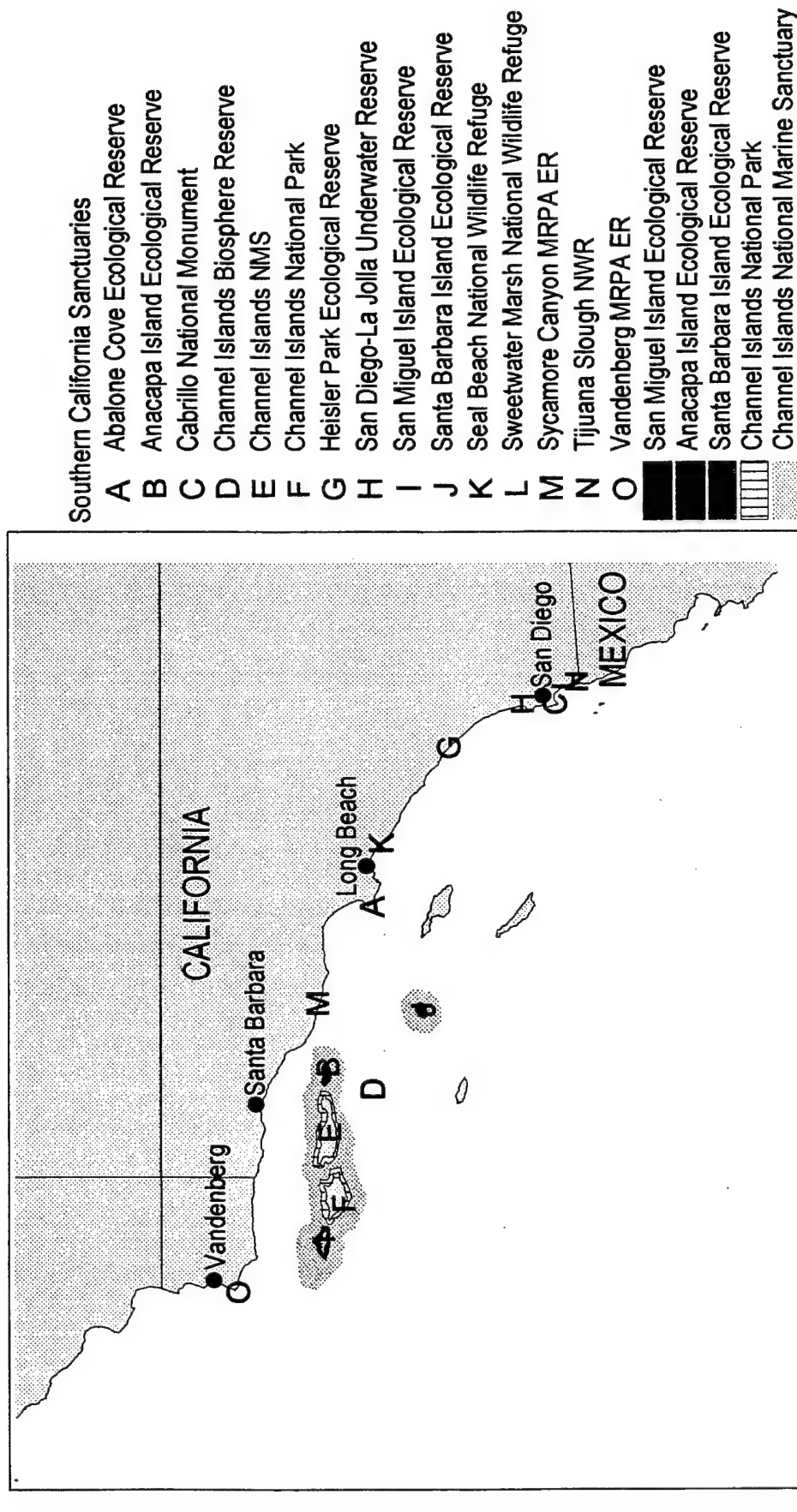
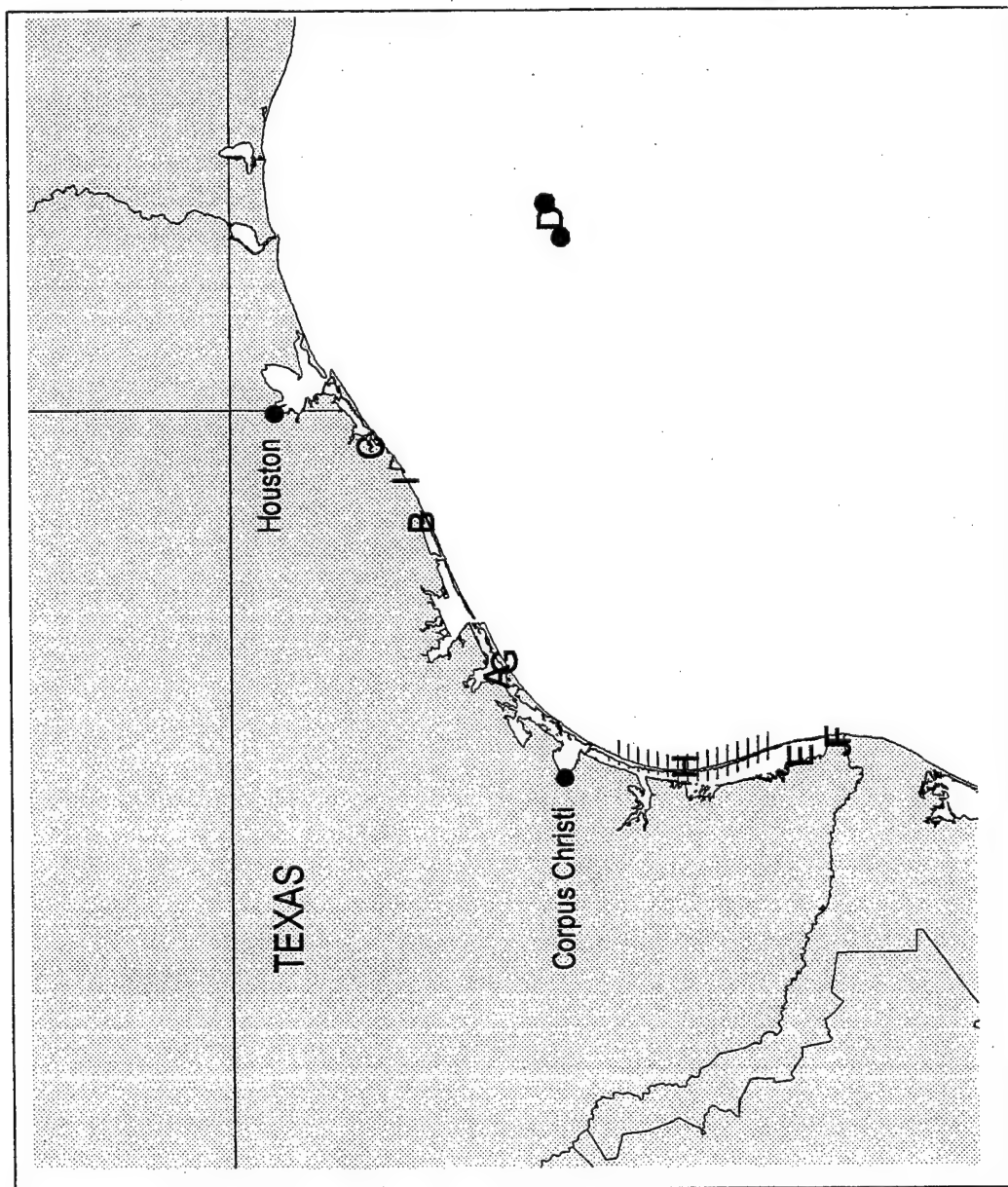


Table 4. Southern California sanctuaries and reserves.

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
SE Pac: So CA	Abalone Cove Ecological Reserve	A	124	rocky intertidal, kelp forest	brown pelican	no aircraft except by permit	8	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: So CA	Anacapa Island Ecological Reserve	B	9113	rocky intertidal, kelp forest, rocky islands	brown pelican	no aircraft except by permit	1,8	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: So CA	Cabrillo National Monument	C	144	rocky intertidal, kelp forest			9	National Park Service	1800 Cabrillo Memorial Drive	San Diego	CA	92106-3601	619 557 5450
SE Pac: So CA	Channel Islands Biosphere Reserve	D	1184740	rocky islands, rocky intertidal, kelp forest	blue, sei, fin, humpback, right and sperm whale, Stellar sea lion, Guadalupe fur seal and brown pelican		1				CA		
SE Pac: So CA	Channel Islands National Marine Sanctuary	E	1048142	kelp forest, littoral ocean, rocky islands, sandy shore	blue, sei, fin, humpback, right and sperm whale, Stellar sea lion, Guadalupe fur seal and brown pelican	no aircraft within 1000'	1,2,4	NOAA Sanctuaries and Reserves Division	113 Harbor Way	Santa Barbara	CA	93109	805 966 7107
SE Pac: So CA	Channel Islands National Park	F	119186	rocky islands, rocky intertidal, kelp forest	blue, sei, fin, humpback, right and sperm whale, Stellar sea lion, Guadalupe fur seal and brown pelican		1,9	National Park Service, State of CA	1901 Spinnaker Dr.	Ventura	CA	93001	805 658 5730
SE Pac: So CA	Heister Park Ecological Reserve	G	30	sandy shore, kelp forest	brown pelican	no aircraft except by permit	8	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: So CA	San Diego-La Jolla Underwater Reserve	H	5977	kelp forests		no aircraft except by permit	1	City of La Jolla, Dept of Parks and Recreation	2581 Quivira Ct.	San Diego	CA	92109	619 221 8866
SE Pac: So CA	San Miguel Island Ecological Reserve	I	17993	kelp forest, rocky intertidal	Stellar sea lion, Guadalupe fur seal	no aircraft except by permit	1,8	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: So CA	Santa Barbara Island Ecological Reserve	J	7921	kelp forest, rocky intertidal	brown pelican	no aircraft except by permit	1	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: So CA	Seal Beach National Wildlife Refuge	K		salt marsh	brown pelican, CA least tern		6	US Fish and Wildlife Service	San Diego Complex, 2736 Loker Ave. West	Carlsbad	CA	92008	760 930 0168
SE Pac: So CA	Sweetwater Marsh National Wildlife Refuge	L		salt marsh/tidal flat	CA least tern		6	US Fish and Wildlife Service	San Diego Complex, 2736 Loker Ave. West	Carlsbad	CA	92008	760 930 0168
SE Pac: So CA	Sycamore Canyon Marine Resources Protection Act Ecological Reserve	M	1674	kelp forest, rocky intertidal	brown pelican, CA least tern		1	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281
SE Pac: So CA	Tijuana Slough National Wildlife Refuge	N		salt marsh/tidal flat	brown pelican, CA least tern		6	US Fish and Wildlife Service	301 Caspian Way	Imperial Beach	CA	91932	619 575 2704
SE Pac: So CA	Vandenberg Marine Resources Protection Act Ecological Reserve	O	1674	kelp forest, rocky intertidal	brown pelican, CA least tern		1	CA Dept of Fish and Game	1416 Ninth St.	Sacramento	CA	95814	916 653 6281

GULF OF MEXICO

Texas Sanctuaries



Texas Sanctuaries

A Aransas NWR

B Big Boggy NWR

C Brazoria NWR

D Flower Garden NMS

E Laguna Atascosa NWR

F Lower Rio Grande Valley NWR

G Matagorda Island State Park

H Padre Island National Seashore

I San Bernard NWR

J Santa Ana NWR

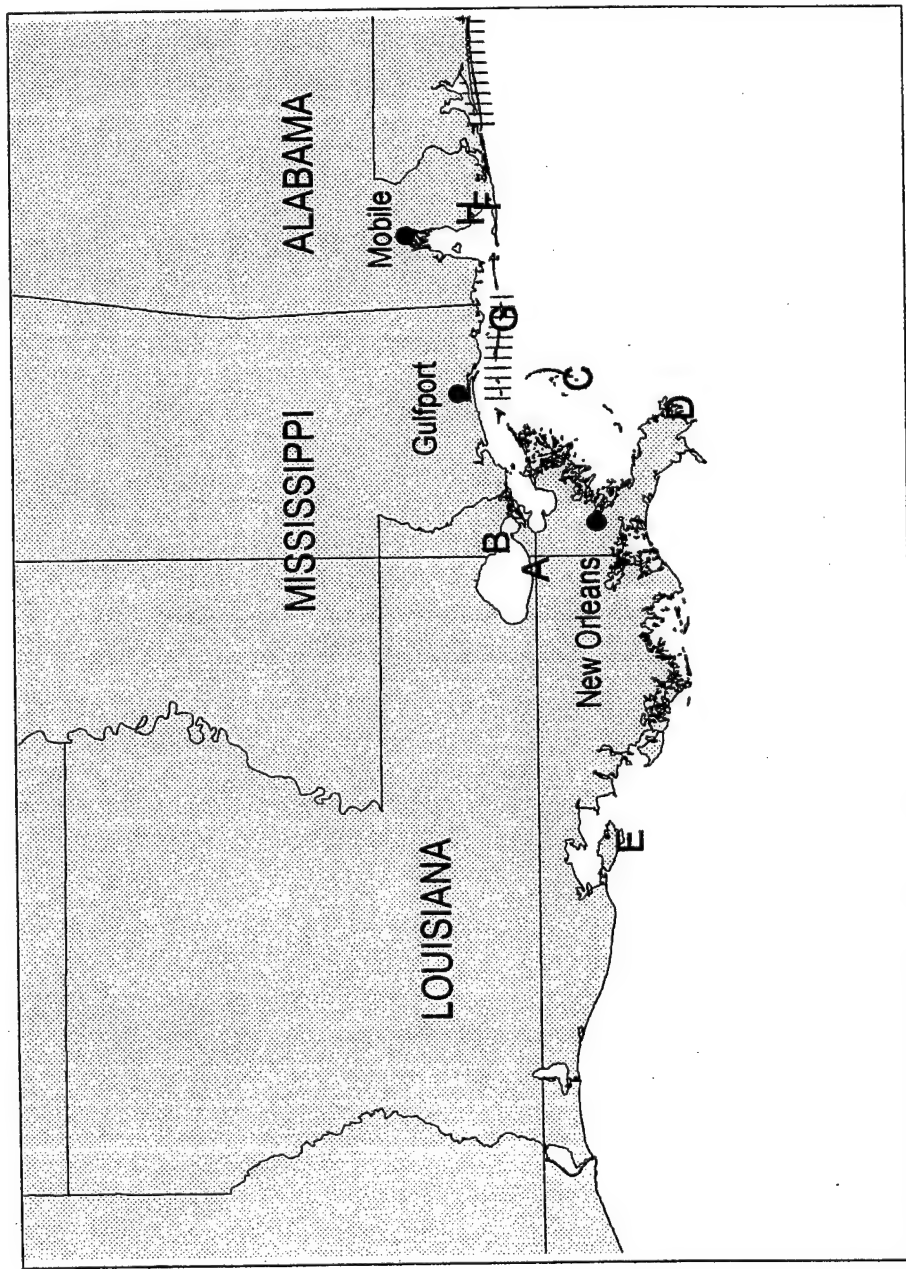
Padre Island National Seashore

Flower Garden NMS

Table 5. Texas sanctuaries and reserves.

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
Gulf of Mex. TX	Aransas National Wildlife Refuge	A		salt marsh	green, hawksbill, Kemp ridley, loggerhead and leatherback sea turtles, brown pelicans		6	U.S. Fish and Wildlife Service	PO Box 100	Austwell	TX	77950	512 286 3559
Gulf of Mex. TX	Big Buggy National Wildlife Refuge	B	4536	salt marsh	brown pelican		6	U.S. Fish and Wildlife Service	c/o Brazoria NWR, 1212 N. Velasco, Suite 200	Angleton	TX	77515	409 864 3639
Gulf of Mex. TX	Brazoria National Wildlife Refuge	C	40854	salt marsh, freshwater marsh	brown pelican		6	U.S. Fish and Wildlife Service	c/o Brazoria NWR, 1212 N. Velasco, Suite 200	Angleton	TX	77515	409 849 77710
Gulf of Mex. TX	Laguna Atascosa National Wildlife Refuge	D	45187	salt marsh, freshwater marsh	loggerhead sea turtles, brown pelican		6	U.S. Fish and Wildlife Service	PO Box 450	Rio Hondo	TX	78583	210 748 3607
Gulf of Mex. TX	Lower Rio Grande Valley National Wildlife Refuge	E		sandy shore, salt marsh, freshwater marsh	green, hawksbill, Kemp ridley, loggerhead and leatherback sea turtles, brown pelicans		6	U.S. Fish and Wildlife Service	c/o Lower Rio Grande Valley/Santa Ana Complex, Route 2, Box 202A	Alamo	TX	78516	210 787 3079
Gulf of Mex. TX	Flower Garden National Marine Sanctuary	F		reefs	loggerhead sea turtles		5	NOAA Sanctuaries and Reserves Division	216 W. 26th St., Suite 104	Bryan	TX	77803	409 779 2705
Gulf of Mex. TX	Malagorda Island State Park and Wildlife Management Area	G	43893	sandy shore	Atlantic ridley sea turtle, brown pelican		21	Texas Parks and Wildlife Department	PO Box 117	Port O'Connor	TX	77982	512 983 2215
Gulf of Mex. TX	Padre Island National Seashore	H	133000	sandy shore	Atlantic ridley and loggerhead sea turtles, brown pelican		9	National Park Service	9405 South Padre Island Drive	Corpus Christi	TX	78418	512 949 8173
Gulf of Mex. TX	San Bernard National Wildlife Refuge	I	24455	salt marsh, freshwater marsh	brown pelican		6	U.S. Fish and Wildlife Service	c/o Brazoria NWR, 1212 N. Velasco, Suite 200	Angleton	TX	77515	409 849 77710
Gulf of Mex. TX	Santa Ana National Wildlife Refuge	J		sandy shore, salt marsh, freshwater marsh	brown pelican		6,22	U.S. Fish and Wildlife Service	c/o Lower Rio Grande Valley/Santa Ana Complex, Route 2, Box 202A	Alamo	TX	78516	210 787 3079

Louisiana, Mississippi and Alabama Sanctuaries



Louisiana Sanctuaries

- A Bayou Sauvage NWR
- B Big Branch Marsh NWR
- C Breton NWR
- D Delta NWR
- E Shell Keys NWR

Alabama and Mississippi Sanctuaries

- F Bon Secour NWR
- G Gulf Islands NS
- H Weeks Bay NERR
- ||||| Gulf Islands National Seashore

Table 6. Louisiana, Mississippi and Alabama sanctuaries and reserves.

Region	Name	Letter Desig	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
Gulf of Mex: LA	Bayou Sauvage National Wildlife Refuge	A		salt marsh, freshwater marsh	brown pelican		6	U.S. Fish and Wildlife Service	c/o Southeast Louisiana Refuges, 1010 Gause Blvd., Bldg 936	Slidell	LA	70458	504 646 7555
Gulf of Mex: LA	Big Branch Marsh National Wildlife Refuge	B	3660	freshwater marsh	brown pelican		6	U.S. Fish and Wildlife Service	c/o Southeast Louisiana Refuges, 1010 Gause Blvd., Bldg 936	Slidell	LA	70458	504 646 7555
Gulf of Mex: AL	Bon Secour National Wildlife Refuge	F		salt marsh, freshwater marsh, sandy shore	loggerhead sea turtles		6	U.S. Fish and Wildlife Service	12295 State Hwy 180	Gulf Shores	AL	36542	334 540 7720
Gulf of Mex: LA	Breton National Wildlife Refuge	C	6923	sandy shore, salt marsh	Green, Kemp ridley, leatherback and loggerhead sea turtles, brown pelican and least tern		6	U.S. Fish and Wildlife Service	c/o Southeast Louisiana Refuges, 1010 Gause Blvd., Bldg 936	Slidell	LA	70458	504 646 7555
Gulf of Mex: LA	Delta National Wildlife Refuge	D	48600	freshwater marsh, salt marsh	brown pelican		6	U.S. Fish and Wildlife Service	c/o Southeast Louisiana Refuges, 1010 Gause Blvd., Bldg 936	Slidell	LA	70458	504 534 2235
Gulf of Mex: MS	Gulf Islands National Seashore	G	135625	salt marsh, sandy shore	brown pelican		9, 12	National Park Service	3500 Park Road	Ocean Springs	MS	39564	601 875 0821
Gulf of Mex: LA	Shell Keys National Wildlife Refuge	E		sandy shore	brown pelican		6	U.S. Fish and Wildlife Service	c/o Southeast Louisiana Refuges, 1010 Gause Blvd., Bldg 936	Slidell	LA	70458	504 646 7555
Gulf of Mex: AL	Weeks Bay National Estuarine Research Reserves	H	>3000	salt marsh, sandy shore	brown pelican		20	NOAA Sanctuaries and Reserves Division and AL Dept. Economic and Community Affairs	11300 US Highway 98	Fairhope	AL	36532	334 928 9792

Florida Gulf of Mexico Sanctuaries

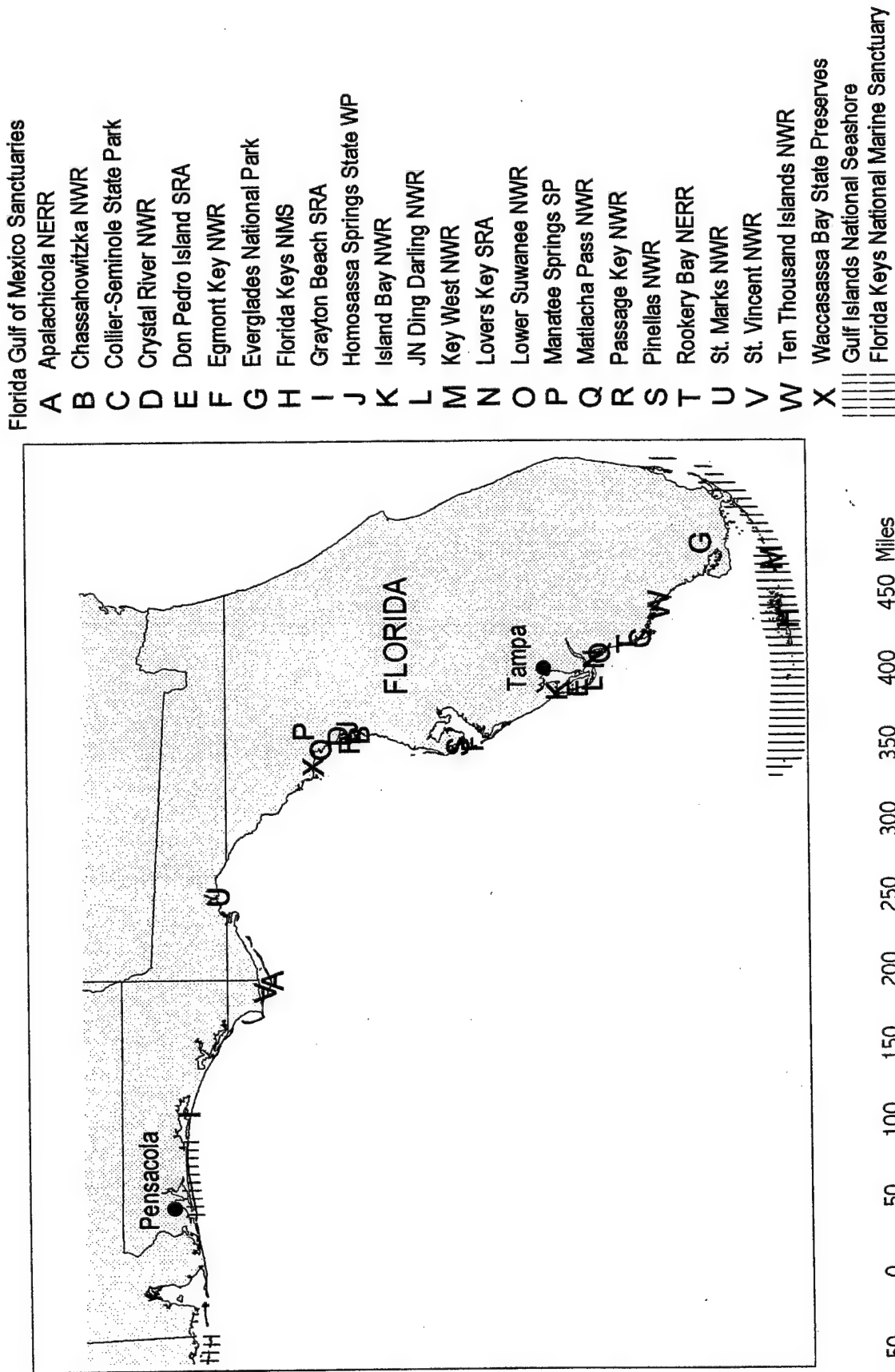


Table 7. Florida (Gulf of Mexico) sanctuaries and reserves.													
Region	Name	Letter Designation	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
Gulf of Mexico, FL	Apalachicola National Estuarine Research Reserves	A	193758	salt marsh, sandy shore	manatees, green, Atlantic Ridley, leatherback, and loggerhead sea turtles		19	Florida Dept of Environmental Protection, and NOAA	261 7th Street	Apalachicola	FL	32320	904 653 8063
Gulf of Mexico, FL	Chassahowitzka National Wildlife Refuge	B	30,500	salt marsh	manatees, green, Kemp Ridley and loggerhead sea turtles		6	U.S. Fish and Wildlife Service	c/o Chassahowitzka NWR, 1502 SE Kings Bay Drive	Crystal River	FL	34429	352 563 2088
Gulf of Mexico, FL	Collier-Seminole State Park	C		salt marsh	manatees		13	Florida State Parks	20200 E. Tamiami Trail	Naples	FL	34114	941 394 3397
Gulf of Mexico, FL	Crystal River National Wildlife Refuge	D	43	freshwater marsh	manatees		6	U.S. Fish and Wildlife Service	1502 SE Kings Bay Drive	Crystal River	FL	34429	352 563 2088
Gulf of Mexico, FL	Don Pedro Island State Recreation Area	E		sandy shore	loggerhead sea turtles		24	Florida State Parks	c/o Cayo Costa State Park, P.O. Box 1150	Boca Grande	FL	33921	941 964 0375
Gulf of Mexico, FL	Egmont Key National Wildlife Refuge	F	350	sandy shore, saltmarsh	loggerhead sea turtles		6	U.S. Fish and Wildlife Service	c/o Chassahowitzka NWR, 1502 SE Kings Bay Drive	Crystal River	FL	34429	352 563 2088
Gulf of Mexico, FL	Everglades National Park	G	1506539	salt marsh, freshwater marsh, mangroves	manatees		9,12	National Park Service	40001 State Road 9336	Homestead	FL	33034-6733	305 242 7700
Gulf of Mexico, FL	Florida Keys National Marine Sanctuary	H		mangroves, coral reef			5,12	NOAA Sanctuaries and Reserves Division	P.O. Box 500368	Marathon	FL	33050	305 743 2437
Gulf of Mexico, FL	Grayton Beach State Recreation Area	I	400	sandy shore	sea turtles		24	Florida State Parks	Box 6600	Santa Rosa Beach	FL	32459	904 231 4210
Gulf of Mexico, FL	Homosassa Springs State Wildlife Park	J		freshwater marsh	manatees		24	Florida State Parks	9225 West Fish Bowl Drive	Homosassa	FL	34448	352 628 5343
Gulf of Mexico, FL	Island Bay National Wildlife Refuge	K		mangroves, salt marsh	manatees		6	U.S. Fish and Wildlife Service	c/o JN Ding Darling NWR, 1 Wildlife Drive	Sanibel	FL	33957	941 472 1100

Table 7. (Cont).

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
Gulf of Mexico, FL	JN Ding Darling National Wildlife Refuge	L		mangrove, freshwater marsh	manatees		6	U.S. Fish and Wildlife Service	JN Ding Darling NWR, 1 Wildlife Drive	Sanibel	FL	33957	941 472 1100
Gulf of Mexico, FL	Key West National Wildlife Refuge	M	2018	salt marsh, mangrove	green sea turtles, loggerhead sea turtles, roseate terns		6	U.S. Fish and Wildlife Service	c/o National Key Deer Refuge, PO Box 430510	Big Pine Key	FL	33043-0510	305 872 2239
Gulf of Mexico, FL	Lovers Key State Recreation Area	N	434	mangroves	manatees		24	Florida State Parks	8700 Estero Blvd.	FL Meyers Beach	FL	33931	941 463 4588
Gulf of Mexico, FL	Lower Suwannee National Wildlife Refuge	O		saltmarsh, freshwater marsh	manatees, loggerhead and Kemp Ridley sea turtles		6	U.S. Fish and Wildlife Service	Route 1, Box 1193-C	Chiefland	FL	32626	904 493 0238
Gulf of Mexico, FL	Manatee Springs State Park	P	2075	freshwater marsh	manatees		24	Florida State Parks	Route 2, Box 617	Chiefland	FL	32626	352 493 6072
Gulf of Mexico, FL	Malliecha Pass National Wildlife Refuge	Q	148	mangrove	manatees		6	U.S. Fish and Wildlife Service	c/o JN Ding Darling NWR, 1 Wildlife Drive	Sanibel	FL	33957	941 472 1100
Gulf of Mexico, FL	Passage Key National Wildlife Refuge	R	30	sandy shore, saltmarsh	green and loggerhead sea turtles		6	U.S. Fish and Wildlife Service	c/o Chassahowitzka NWR, 1502 SE Kings Bay Drive	Crystal River	FL	34428	352 563 2088
Gulf of Mexico, FL	Pinellas National Wildlife Refuge	S		saltmarsh, sandy shore	manatees, green and loggerhead sea turtles		6	U.S. Fish and Wildlife Service	c/o Chassahowitzka NWR, 1502 SE Kings Bay Drive	Crystal River	FL	34429	352 563 2088
Gulf of Mexico, FL	Rookery Bay National Estuarine Research Reserve	T	12500	saltmarsh	manatees		2,5	Florida Dept of Environmental Protection	10 Shell Island Road	Naples	FL	33962	941 775 8645
Gulf of Mexico, FL	St. Marks National Wildlife Refuge	U		salt marsh/tidal flats, freshwater marsh	manatees, green, Kemp Ridley, leatherback and loggerhead sea turtles		6	U.S. Fish and Wildlife Service	PO Box 68	St. Marks	FL	32355	904 925 6121
Gulf of Mexico, FL	St. Vincent National Wildlife Refuge	V		sandy shore	loggerhead sea turtles		6	U.S. Fish and Wildlife Service	PO Box 447	Apalachicola	FL	32329-0447	904 653 8808
Gulf of Mexico, FL	Ten Thousand Islands National Wildlife Refuge	W		saltmarsh, freshwater marsh	manatees, green and loggerhead sea turtles		6	U.S. Fish and Wildlife Service	Florida Panther NWR, 3860 Tollgate Blvd., #300	Naples	FL	34114	941 353 8442
Gulf of Mexico, FL	Waccasassa Bay State Preserve/Cedar Key Scrub State Preserve	X	30764	saltmarsh	manatees		24	Florida State Parks	P.O. Box 187	Cedar Key	FL	32625	352 543 5567

SOUTHWEST ATLANTIC

Florida Atlantic Sanctuaries

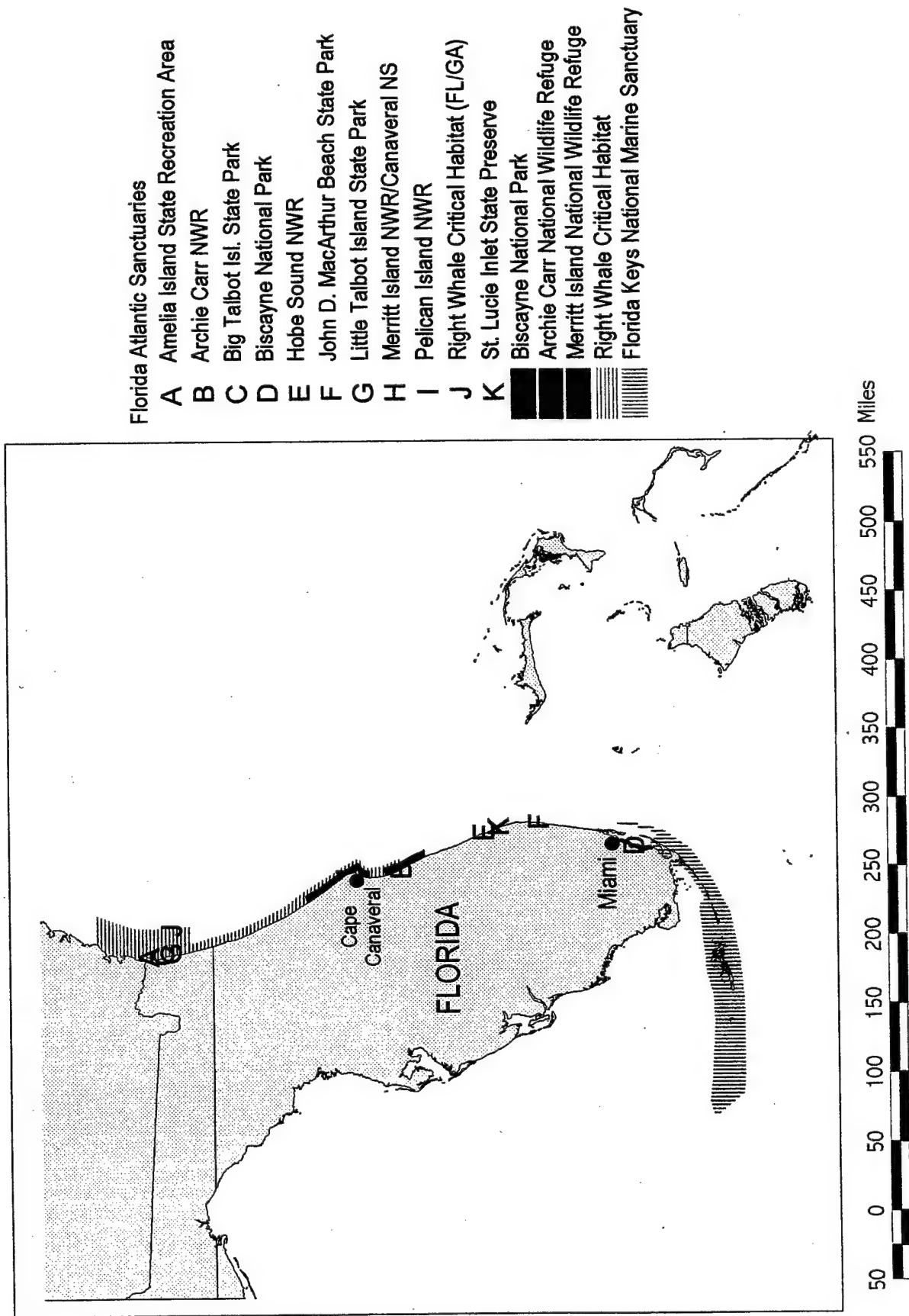


Table 8. Florida (Atlantic) sanctuaries and reserves.

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
NW All: FL	Amelia Island State Recreation Area	A	>200	salt marsh, sandy shore			24	Florida State Parks	c/o The Talbot Islands GEOPark, 11435 FL George Road East	FL George	FL	32226	904 251 2320
NW All: FL	Archie Carr National Wildlife Refuge	B		sandy shore	loggerhead, green hawksbill and leatherback sea turtles		6	U.S. Fish and Wildlife Service	MI Refuge Manager c/o Merritt Island NWR, PO Box 6504	Titusville	FL	32786-3521	407 267 1110
NW All: FL	Big Talbot Island State Park	C		salt marsh, sandy shore			13	Florida State Parks	c/o The Talbot Islands GEOPark, 11435 FL George Road East	FL George	FL	32226	904 251 2320
NW All: FL	Biscayne National Park	D	181500	mangrove, coral reef	sea turtles, manatees		9,12	National Park Service	P.O. Box 1369	Homestead	FL	33090-1369	305 230 7275
NW All: FL	Hobe Sound National Wildlife Refuge	E	967	sandy shore, mangrove	green, loggerhead, and leatherback sea turtles, manatees, least tern		6	U.S. Fish and Wildlife Service	13640 SE Federal Highway	Hobe Sound	FL	33455	561 546 6141
NW All: FL	John D. MacArthur Beach State Park	F	760	sandy shore, mangrove	loggerhead, green and leatherback sea turtles		13	Florida State Parks	10900 S.R. 703 (ATA)	North Palm Beach	FL	33408	407 624 6950
NW All: FL	Little Talbot Island State Park	G		salt marsh, sandy shore			13	Florida State Parks	c/o The Talbot Islands GEOPark, 11435 FL George Road East	FL George	FL	32226	904 251 2320
NW All: FL	Merritt Island National Wildlife Refuge/Canaveral National Seashore	H		tidal flats/saltmarsh, sandy shore	manatee, green, hawksbill, Kemp ridley, leatherback and loggerhead sea turtles, roseate terns		6	U.S. Fish and Wildlife Service	c/o Merritt Island NWR, PO Box 6504	Titusville	FL	32782	417 861 0667
NW All: FL	Pelican Island National Wildlife Refuge	I	4760	sandy shore	manatees, green, hawksbill, Kemp Ridley, and loggerhead sea turtles		6	U.S. Fish and Wildlife Service	c/o Merritt Island NWR, PO Box 6504	Titusville	FL	32782	417 861 0667
NW All: FL	Right Whale Critical Habitat (FL/GA)	J		open ocean	northern right whales		16	National Marine Fisheries Service Office of Protected Resources	1335 East-West Highway	Silver Spring	MD	20910	301 713 2333
NW All: FL	St. Lucie Inlet State Preserve	K		sandy shore, mangrove	loggerhead, green and leatherback sea turtles		13	Florida State Parks	c/o Jonathon Dickinson State Park, 18450 S.E. Federal Highway	Hobe South	FL	33455	407 744 7603

South Carolina and Georgia Sanctuaries

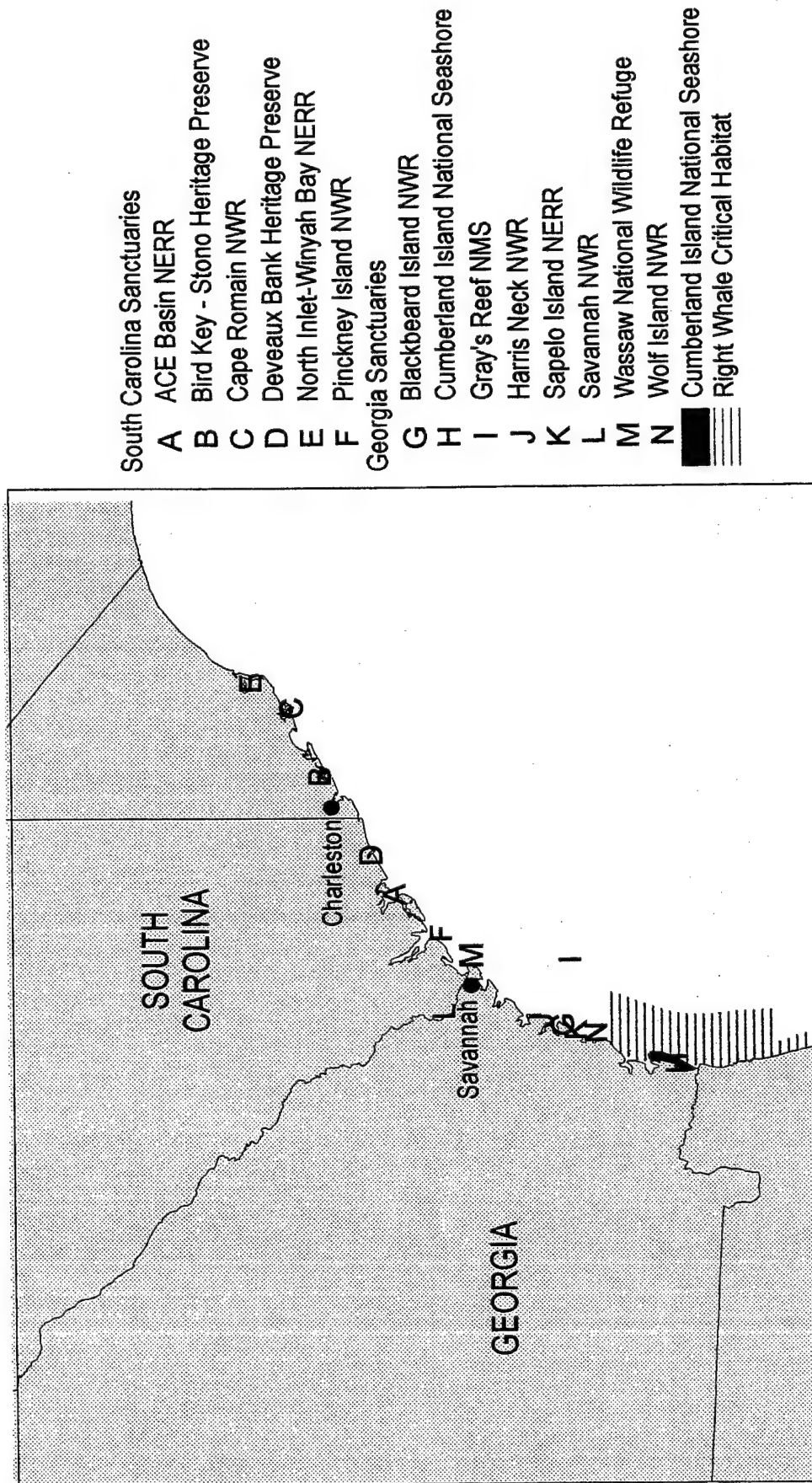
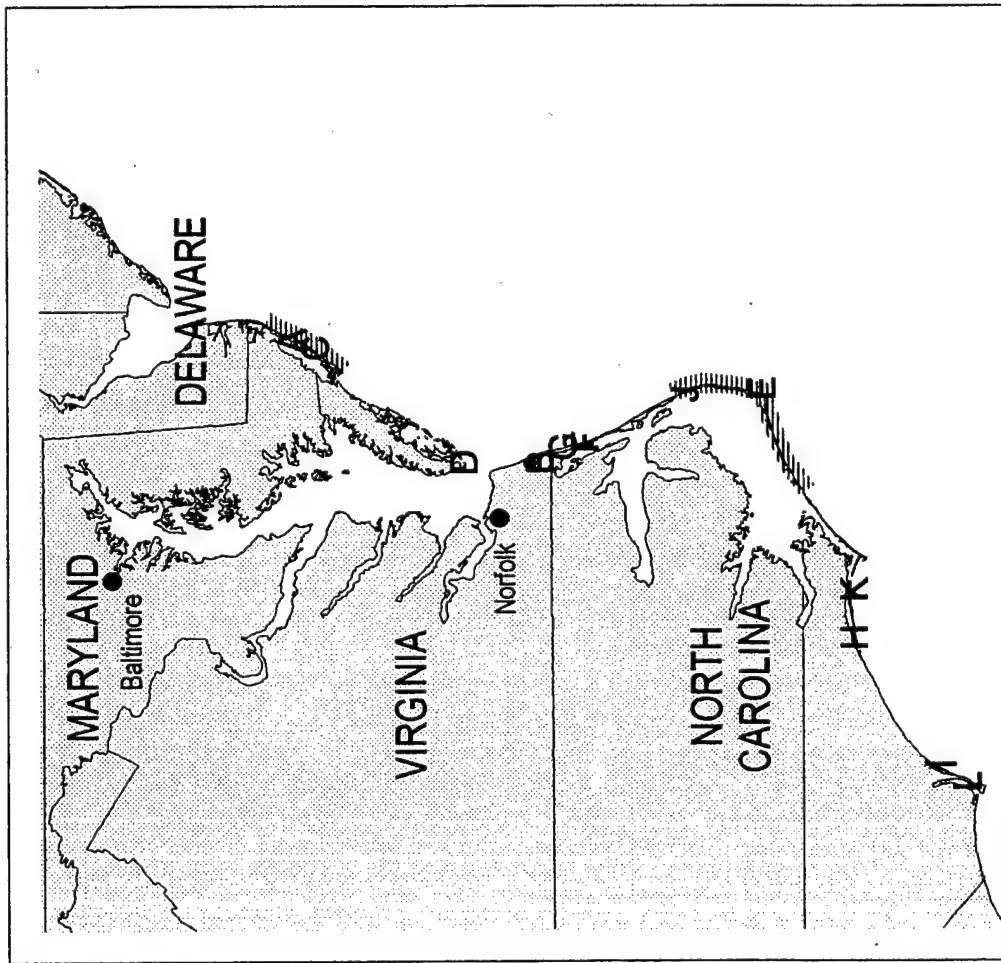


Table 9. South Carolina and Georgia sanctuaries and reserves.

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
SW Allain: SC	ACE Basin National Estuarine Research Preserve	A	140312	saltmarsh	loggerhead sea turtle, manatee		2.5	South Carolina Dept of Natural Resources	PO Box 12559	Charleston	SC	29412	803 762 5000
SW Allain: SC	Bird Key - Stono Heritage Preserve	B	20	saltmarsh, sandy shore			14	South Carolina Dept of Natural Resources	Po Box 167	Columbia	SC	29202	803 734 3893
SW Allain: GA	Blackbeard Island National Wildlife Refuge	G	5618	freshwater marsh, saltmarsh, sandy shore	manatees, loggerhead sea turtles		6	Savannah Coastal Refuges/U.S. Fish and Wildlife Service	1000 Business Center Drive, Suite 10	Savannah	GA	31405	912 652 4415
SW Allain: SC	Cape Romain National Wildlife Refuge	C	34229	saltmarsh, sandy shore	loggerhead sea turtle		6	U.S. Fish and Wildlife Service	5801 Hwy 17N	Awendaw	SC	29429	803 928 3368
SW Allain: GA	Cumberland Island National Seashore	H	33900	saltmarsh, sandy shore	sea turtles		9	National Park Service	PO Box 806	St. Mary's	GA	31558	912 882 4338
SW Allain: SC	Deaux Bank Heritage Preserve	D	15	sandy shore			14	South Carolina Dept of Natural Resources	Po Box 167	Columbia	SC	29202	803 734 3893
SW Allain: GA	Gray's Reef National Marine Sanctuary	I		reefs	right whales, loggerhead sea turtles		2.5	NOAA Sanctuaries and Reserves Division	10 Ocean Science Circle	Savannah	GA	31411	912 598 2345
SW Allain: GA	Harris Neck National Wildlife Refuge	J	2762	salt marsh, freshwater marsh	manatees, loggerhead sea turtles		6	Savannah Coastal Refuges/U.S. Fish and Wildlife Service	1000 Business Center Drive, Suite 10	Savannah	GA	31405	912 652 4415
SW Allain: SC	North Inlet-Winyah Bay National Estuarine Wildlife Refuge	E	12335	salt marsh	loggerhead sea turtle		20	South Carolina Dept of Natural Resources	Baruch Marine Laboratory, University of	Georgetown	SC	29442	803 548 6219
SW Allain: SC	Pinckney Island National Wildlife Refuge	F		saltmarsh			6	U.S. Fish and Wildlife Service			SC		
SW Allain: GA	Sapelo Island National Estuarine Research Preserve	K	17950	saltmarsh, sandy shore	loggerhead turtle		2.5	Georgia Dept of Natural Resources	PO Box 15	Sapelo Island	GA	31327	912 485 2251
SW Allain: GA	Savannah National Wildlife Refuge	L	25608	freshwater marsh	manatee		6	Savannah Coastal Refuges/U.S. Fish and Wildlife Service	1000 Business Center Drive, Suite 10	Savannah	GA	31405	912 652 4415
SW Allain: GA	Wassaw National Wildlife Refuge	M	10070	sandy shore, saltmarsh	loggerhead sea turtles		6	Savannah Coastal Refuges/U.S. Fish and Wildlife Service	1000 Business Center Drive, Suite 10	Savannah	GA	31405	912 652 4415
SW Allain: GA	Wolf Island National Wildlife Refuge	N	5126	saltmarsh, sandy shore	loggerhead sea turtles, manatees		6	Savannah Coastal Refuges/U.S. Fish and Wildlife Service	1000 Business Center Drive, Suite 10	Savannah	GA	31405	912 652 4415

NORTHWEST ATLANTIC

Virginia, Maryland, Delaware and North Carolina Sanctuaries



Virginia, Maryland and Delaware Sanctuaries

A Assateague Island NS

B Back Bay NWR

C Chincoteague NWR

D Fisherman Island NWR

North Carolina Sanctuaries

E Cape Hatteras NS

F Currituck Banks - North Carolina NERR

G Currituck NWR

H Hammocks Beach State Park

I Masonboro Island - North Carolina NERR

J Pea Island NWR

K Rachel Carson - North Carolina NERR

L Zeke's Island - North Carolina NERR

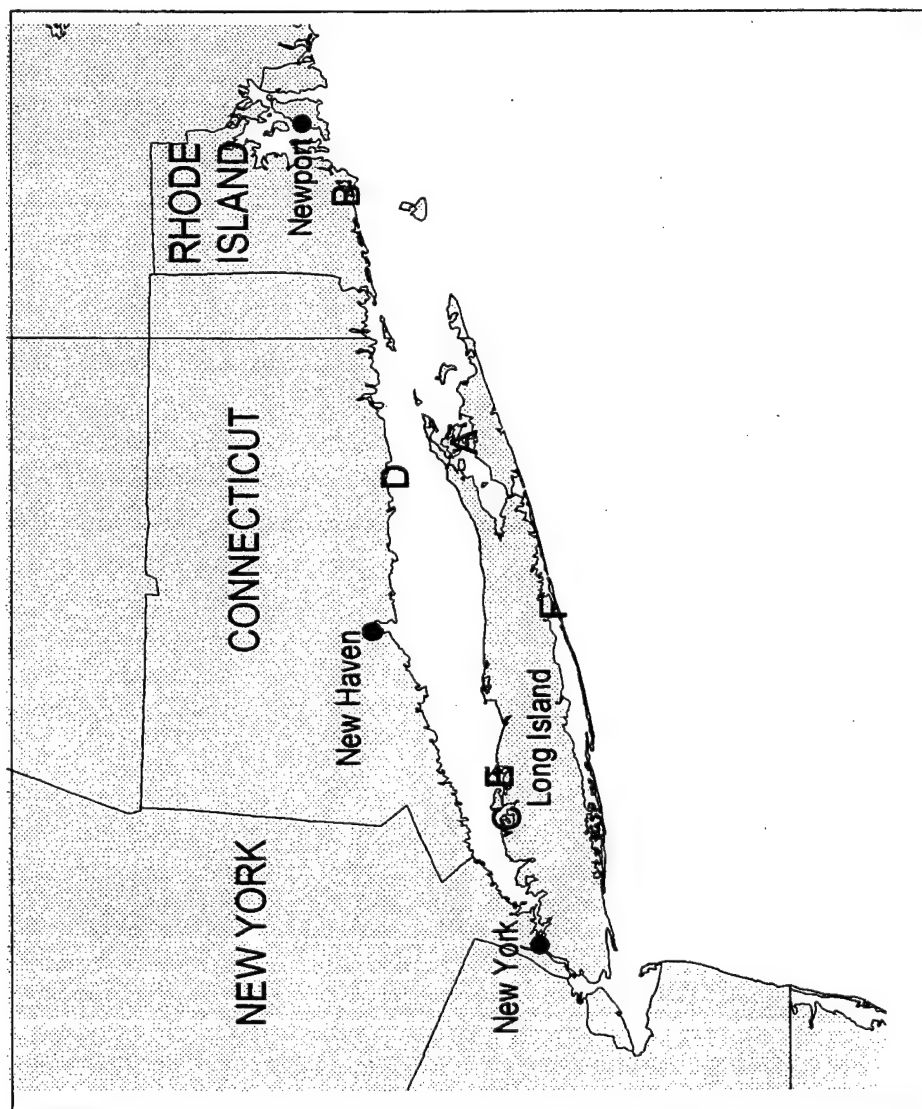
Cape Hatteras National Seashore

Assateague Island National Seashore

Table 10. Virginia, Maryland, Delaware and North Carolina sanctuaries and reserves.

Region	Name	Letter Desig	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
NW Allant: MD	Assateague Island National Seashore	A	18000	sandy shore, saltmarsh			9	National Park Service	7206 National Seashore Lane	Berlin	MD	21811	410 641 1441
NW Allant: VA	Back Bay National Wildlife Refuge	B		saltmarsh, sandy shore	loggerhead turtles		6	U.S. Fish and Wildlife Service	4005 Sandpiper Rd.	Virginia Beach	VA	23456	804 721 2412
NW Allant: NC	Cape Hatteras National Seashore	E		sandy shore, saltmarsh			9	National Park Service	Route 1, Box 675	Manteo	NC	27954	919 473 2111
NW Allant: VA	Chincoteague National Wildlife Refuge	C	14014	sandy shore, saltmarsh	loggerhead turtles		6	U.S. Fish and Wildlife Service	Box 62	Chincoteague	VA	23336	804 336 6122
NW Allant: NC	Curtis Banks Component - North Carolina National Estuarine Research Reserve	F	960	salt marsh, sandy beaches	loggerhead sea turtles		20		UNCW/CMSR, 7205 Wrightsville Ave.	Wilmington	NC	28403	919 256 3721
NW Allant: NC	Currituck National Wildlife Refuge	G		sandy shore	loggerhead sea turtles		6	U.S. Fish and Wildlife Service	c/o Mackay Island NWR, PO Box 39	Knots Island	NC	27950-0039	919 429 3100
NW Allant: VA	Fisherman Island National Wildlife Refuge	D	1700	saltmarsh, sandy shore	kemp ridley, loggerhead, green and leatherback sea turtles		6, 18	U.S. Fish and Wildlife Service	c/o Eastern Shore of Virginia NWR, RFD 1 Box 122B	Cape Charles	VA	23336	804 331 2760
NW Allant: NC	Hammocks Beach State Park	H	736	sandy shore, saltmarsh	loggerhead sea turtles		15	North Carolina State Parks	1572 Hammocks Beach Road	Swansboro	NC	28584	919 326 4881
NW Allant: NC	Masonboro Island Component - North Carolina National Estuarine Research Reserve	I	5097	salt marsh, sandy beaches	loggerhead and green sea turtles		20		UNCW/CMSR, 7205 Wrightsville Ave.	Wilmington	NC	28403	919 256 3721
NW Allant: NC	Pea Island National Wildlife Refuge	J	5980	sandy shore	green and loggerhead sea turtles		6	U.S. Fish and Wildlife Service	c/o Alligator River NWR, PO Box 1969	Manteo	NC	27954	919 987 2394
NW Allant: NC	Rachel Carson Component - North Carolina National Estuarine Research Reserve	K	2625	salt marsh, sandy beaches	loggerhead sea turtles		20		UNCW/CMSR, 7205 Wrightsville Ave.	Wilmington	NC	28403	919 256 3721
NW Allant: NC	Zake's Island Component - North Carolina National Estuarine Research Reserve	L	1160	salt marsh, sandy beaches	loggerhead sea turtles		20		UNCW/CMSR, 7205 Wrightsville Ave.	Wilmington	NC	28403	919 256 3721

New York, Rhode Island and Connecticut Sanctuaries



New York, Connecticut and Rhode Island Sanctuaries

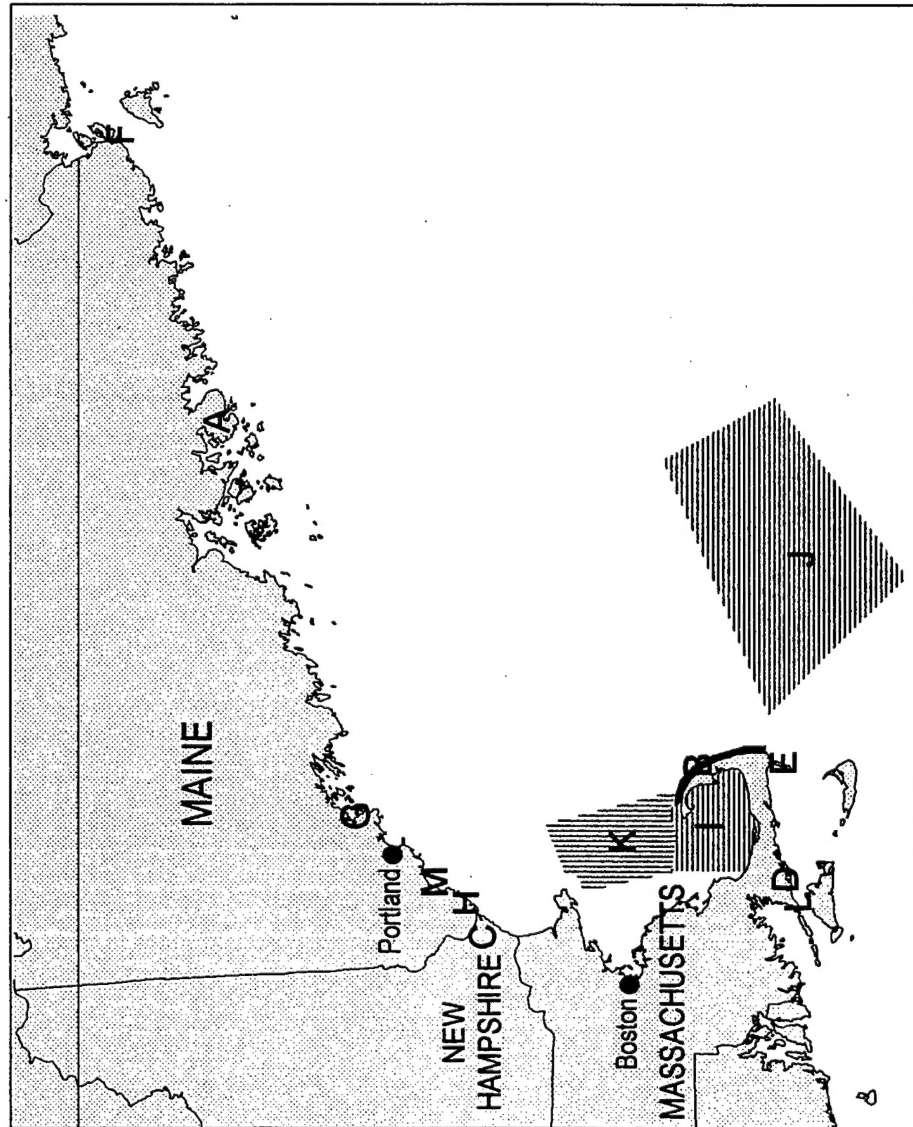
- A** Elizabeth A. Morton NWR
- B** Ningret NWR
- C** Oyster Bay NWR
- D** Stewart B. McKinney NWR
- E** Target Bay NWR
- F** Wertheim NWR

40 0 40 80 120 160 200 Miles

Table 11. New York, Rhode Island and Connecticut sanctuaries and reserves.

Region	Name	Letter Desig	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
NW Allam: NY	Elizabeth A. Morton National Wildlife Refuge	A		sandy shore, saltmarsh, freshwater marsh	Kemp ridley and loggerhead sea turtles, roseate terns		6	U.S. Fish and Wildlife Service	c/o Long Island Complex, PO Box 21	Shirley	NY	11967	516 286 0485
NW Allam: RI	Ninigret National Wildlife Refuge	B			roseate tern		6	U.S. Fish and Wildlife Service	PO Box 307	Charlestown	RI	02813	401 364 9124
NW Allam: NY	Oyster Bay National Wildlife Refuge	C		saltmarsh, freshwater marsh, sandy shore	Kemp ridley, leatherback and loggerhead sea turtles		6	U.S. Fish and Wildlife Service	c/o Long Island Complex, PO Box 21	Shirley	NY	11967	516 286 0485
NW Allam: CT	Stewart B. McKinney National Wildlife Refuge	D			roseate tern		6	U.S. Fish and Wildlife Service	PO Box 1030	Westbrook	CT	06498	203 399 2513
NW Allam: NY	Target Bay National Wildlife Refuge	E		saltmarsh, sandy shore	loggerhead turtles, least and common terns		6	U.S. Fish and Wildlife Service	c/o Long Island Complex, PO Box 21	Shirley	NY	11967	516 286 0485
NW Allam: NY	Wertheim National Wildlife Refuge	F		saltmarsh, sandy shore	loggerhead turtles		6	U.S. Fish and Wildlife Service	c/o Long Island Complex, PO Box 21	Shirley	NY	11967	516 286 0485

Massachusetts, New Hampshire and Maine Sanctuaries



Massachusetts, New Hampshire and Maine Sanctuaries

A Acadia National Park

B Cape Cod National Seashore

C Great Bay NERR

D Mashpee NWR

E Monomoy NWR

F Petit Manan NWR

G Pond Island NWR

H Rachel Carson NWR

I Right Whale Crit. Hab. - Cape Cod Bay

J Right Whale Crit. Hab. - Great South Channel

K Stellwagen Bank NMS

L Waquoit Bay NERR

M Wells NERR

N Stellwagen Bank NMS

O Right Whale Critical Habitat

P Cape Cod National Seashore

Table 12. Massachusetts, New Hampshire and Maine sanctuaries and reserves.

Region	Name	Letter Design	Size (acres)	Habitat Types	Listed Marine Animals	Special Comments	Info Sources	Admin	Street Address	City	ST	Zip Code	Phone #
NW All: ME	Acadia National Park	A	40000	rocky islands, forest	roseate and least terns		9	National Park Service	PO Box 177	Bar Harbor	ME	4809	207 288 3338
NW All: MA	Cape Cod National Seashore	B	43557	sandy shore	right whales		9	National Park Service	99 Marconi Site Road	Wellfleet	MA	2667	508 349 3785
NW All: NH	Great Bay National Estuarine Research Reserve	C	5280	sandy shore, saltmarsh	common terns		5	N.H. Fish and Game Department	37 Concord Rd	Durham	NH	3824	603 868 1095
NW All: MA	Mashpee National Wildlife Refuge	D			roseate terns		6	U.S. Fish and Wildlife Service	c/o Great Meadows NWR, Weir Hill Rd	Sudbury	MA	1776	508 443 4661
NW All: MA	Monomoy National Wildlife Refuge	E		sandy shore	roseate terns		6	U.S. Fish and Wildlife Service	Wilks Way Morris Island	Chatham	MA	2633	508 945 0594
NW All: ME	Petit Menan National Wildlife Refuge	F			roseate and least terns		6	U.S. Fish and Wildlife Service	Box 279	Milbridge	ME	4858	207 546 2124
NW All: ME	Pond Island National Wildlife Refuge	G	10	sandy shore	roseate terns		6	U.S. Fish and Wildlife Service	Box 279	Milbridge	ME	4858	207 546 2124
NW All: ME	Rachel Carson National Wildlife Refuge	H	4500		roseate and least terns		6	U.S. Fish and Wildlife Service	Box 751	Wells	ME	4090	207 646 9226
NW All: MA	Right Whale Critical Habitat - Great South Channel	I		shoal	right, humpback, fin, blue, sei whales and roseate terns		16	National Marine Fisheries Service Office of Protected Resources	1335 East-West Highway	Silver Spring	MD	20910	301 713 2333
NW All: MA	Right Whale Critical Habitat - Cape Cod Bay	J		shoal	right, humpback, fin, blue, sei whales and roseate terns		16	National Marine Fisheries Service Office of Protected Resources	1335 East-West Highway	Silver Spring	MD	20910	301 713 2333
NW All: MA	Stellwagen Bank National Marine Sanctuary	K			right, humpback, fin, blue, sei whales and roseate terns		5	NOAA Sanctuaries and Reserves Division	14 Union Street	Plymouth	MA	2360	508 747 1691
NW All: MA	Waquoit Bay National Estuarine Research Reserve	L	2250	sandy shore, saltmarsh	roseate and least terns		5	NOAA Sanctuaries and Reserves Division	PO Box 3092	Waquoit	MA	2536	508 457 0495
NW All: ME	Wells National Estuarine Research Reserve	M	1600	sandy shore, saltmarsh	least tern		5	NOAA Sanctuaries and Reserves Division	342 Laudholm Farm Road	Wells	ME	4090	207 646 1555

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- 15 North Carolina parks webpage: <http://ils.unc.edu/parkproject/habe.html>
- 16 Federal Register web page: <http://frwebgate.access.gpo.gov/>
- 17 Chincoteague National Wildlife Refuge Resource Manager e-mail 9/19/97
- 18 Eastern Shore of Virginia NWR Supervisory Refuge Operations Specialist, James Wood, e-mail 9/24/97
- 19 Apalachicola NERR webpage: <http://inlet.geol.sc.edu/APA/>
- 20 NOAA National Estuarine Research Reserves homepage: <http://wave.nos.noaa.gov/ocrm/nerr/reserves>
- 21 Texas State Parks webpage: <http://www.tpwd.state.tx.us/park>
- 22 Wild Texas webpage: <http://www.wildtexas.com>
- 23 NOAA/NMFS/AFSC/NMML web page: <http://nmml01.afsc.noaa.gov>
- 24 Florida Parks web page: <http://www.dep.state.fl.us/parks/>